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Scottish Birds is the quarterly journal for SOC members, and is published in March, June, September and December annually.

Containing original papers relating to ornithology in Scotland, topical articles, bird observations, reports of rare and scarce bird sightings, alongside branch and Club-related news, our members tell us that *Scottish Birds* is one of the key benefits of belonging to the SOC. Its different sections have been developed to meet the wide needs of the birdwatching community, and the publication is renowned for its first-class photography.

An archive of the journal is available on the SOC website, where links can be found to other Club publications including the *Online Scottish Bird Report.*

More about the SOC...

On the one hand, a birdwatching club. Established in 1936, the Scottish Ornithologists' Club (SOC) is Scotland's bird club with 15 branches around the country and a growing membership of over 3,000. Through a programme of talks, outings, conferences and other events, it brings together like-minded individuals with a passion for birds, nature and conservation.

On the other, a network of volunteers across Scotland, gathering vital, impartial information about our wild birds. The data we collect is made available to conservationists, planners and developers, and is used by organisations such as the RSPB, as one of the first points of reference in informed conservation planning.

Club Headquarters can be found at Waterston House, Aberlady, overlooking the scenic local nature reserve. Housed within, is the George Waterston Library, the largest ornithological library in Scotland, and the Donald Watson Gallery - one of the jewels in the Waterston House crown, exhibiting wildlife art all year-round.

Join us...

As well as receiving *Scottish Birds* every quarter, SOC members have access to a programme of talks and outings across Scotland and affiliation to a local branch of the Club. New members choosing to pay their subscription by direct debit are eligible to a free thank you gift.

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For more information about the Club and its activities, including details of how to join, please visit www.the-soc.org.uk or contact Waterston House on 01875 871 330, or email membership@the-soc.org.uk

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Plate 82. Ruth Briggs, near Athelstaneford, East Lothian, 27 March 2023. © *Jonathan Briggs*

Birding and science

Watching, listening, counting, monitoring, recording, sharing – some of the ways that we, as SOC members, enjoy and contribute to the collective knowledge and conservation of Scotland's birds.

Many members contribute through direct involvement, perhaps through undertaking projects or contributing regular records to BirdTrack. Others share their interest and enthusiasm and thereby motivate others. Whichever your preference, it's all important and infinite. As people and organisations in Scotland strive to achieve sustainability targets relating to climate change, resource use and biodiversity our knowledge of birds' changing distributions, numbers, behaviours and survival rates is a critical part of measuring developments and identifying future actions.

Club-wide, SOC has supported Local Bird Recorders for 55 years, coordinates the Scottish Birds Records Committee and is a partner in both the Scottish Raptor Monitoring Scheme and in BirdTrack. Our Birding & Science Committee maintains a strategic view of our priorities across all these fields while focussing on areas where SOC can contribute or inspire the most. This is a vital part of SOC's function, for and by its members, delivered through fieldwork, reports, publications, conference papers and training, and highly regarded by other organisations. Online, social media and app use is also growing.

The SOC Birding & Science Committee is led by one of our two Vice Presidents, currently Professor Jeremy Wilson. Jeremy has chaired the Committee since its inception and has been on SOC's Council, as a Vice President, for some seven years. He stands down this summer, having helped us still further by accepting an extension of his term up to this time. When I myself joined the Council last year, one of the most significant in-house pieces I read was Jeremy's 2019 paper identifying, in discussion with colleagues, SOC's strategic goals for continuing to secure "high quality knowledge on Scotland's birds (at national and local level) available for conservation and research". The 'Knowledge Gaps' paper in this edition of *Scottish Birds* derives from that, gives us an online resource and invites us to consider what we don't know enough about and how we can help plug the gaps.

Jeremy says "the SOC was a huge source of expertise and advice to me when I first came to Scotland, as a PhD student, over 35 years ago. So, it has been a great privilege to support the Club through the establishment of our Birding & Science Committee, and the appointment of a full-time Birding & Science Officer."

Our sincere thanks to Jeremy for the leadership he's provided for many years; we know he'll continue to be an active SOC member. Following him in the role of Vice President (Birding & Science) will be Chris Wernham, a current member of SOC's Council whose co-option to the position was agreed at Council's last meeting. Her own ornithological, scientific and management expertise will stand us in very good stead.

Ruth Briggs, SOC President

Scottish Birds Records Committee report on rare birds in Scotland, 2021

C.J. McINERNY & R.Y. McGOWAN
on behalf of the Scottish Birds Records Committee

This is the 14th annual report of the Scottish Birds Records Committee (SBRC) describing rare birds recorded in Scotland during 2021. Annual reports that cover the period 2005 to 2020 can be found in previous issues of *Scottish Birds* or downloaded at www.the-soc.org.uk/bird-recording/sbrc-species-analysis, some of which are cited in this report.

A summary of the rare bird species considered by SBRC, the SBRC List, and other committees is given in **Appendix 2**, and is shown at www.the-soc.org.uk/bird-recording/sbrc-list-past-lists

Recent changes to the SBRC List include, from March 2022, Scottish Crossbill *Loxia scotica* removed from the List (Lewis & McInerny 2022a, 2022b; www.the-soc.org.uk/content/bird-recording/sbrc/identification-of-scottish-and-parrot-crossbills). Furthermore, from January 2023, SBRC will consider records of Red-crested Pochard *Netta rufina*, Little Owl *Athene noctua*, European Bee-eater *Merops apiaster* and Marsh Tit *Poecile palustris*, with local dispensation for recording areas Dumfries & Galloway and Borders for Little Owl, and Borders for Marsh Tit (Lewis *et al.* 2023). For a summary of these changes see **Appendix 2** and www.the-soc.org.uk/bird-recording/sbrc-list-past-lists

The distribution and number of most rare birds reported in Scotland during 2021 was similar to other years. However, a Black Brant *Branta bernicla nigricans* was observed for the first time since 2012, this being only the third Scottish record. Two Cetti's Warblers *Cettia cetti* were seen, the fourth and fifth national records, and an exceptional six Melodious Warblers *Hippolais polyglotta* were observed, including an amazing run of five on Fair Isle. Continuing increases in records were noted for several species including Lesser Yellowlegs *Tringa flavipes*, Cattle Egret *Bubulcus ibis*, Woodchat Shrike *Lanius senator*, Radde's Warbler *Phylloscopus schwarzi*, Arctic Warbler *P. borealis*, Melodious Warbler *Hippolais polyglotta*, Red-flanked Bluetail *Tarsiger cyanurus*, and Citrine Wagtail *Motacilla citreola*.

In contrast, a number of SBRC species were not seen in Scotland during 2021 including Black-winged Stilt *Himantopus himantopus*, Night-heron *Nycticorax nycticorax*, Purple Heron *Ardea purpurea*, Montagu's Harrier *Circus pygargus* and Red-footed Falcon *Falco vespertinus*. Strikingly, no Ortolan Buntings *Emberiza hortulana* were recorded during 2021, the first blank year since the formation of SBRC. This species in the past was observed as a scarce passage migrant, with 10–20 records a year, though 105 were reported in the spring of 1969 and over 40 in 1995 and 1996 (Forrester *et al.* 2007). This decline in Scottish records reflects the collapse of the west European population, following illegal and unsustainable hunting of the species for gastronomic reasons (Jiguet *et al.* 2019).

Format of the report

The species accounts in the report follow a standard format. Nomenclature and taxonomic sequence follow the latest version of the *Scottish List*, which follows the 10th Edition of the British List and subsequent changes adopted by the British Ornithologists' Union (BOU 2022, 2023; www.the-soc.org.uk/bird-recording/the-scottish-list).

On the header line, after the species or subspecies name, are three numbers:

- Total number of birds in Scotland to the end of 2004, based on Forrester *et al.* (2007) with adjustments in a few cases, and also including records added in this report. In some cases older records, 'At Sea' records, or records pertaining to the breeding population are explicitly excluded from the totals, following the example of Forrester *et al.* (2007). In the case of Ortolan Bunting *Emberiza hortulana* numbers seen in the past were so great that totals have not been estimated.
- Total number of birds in Scotland during the period since 2004 but excluding the current year. Where appropriate, acceptances by BBRC and by local committees are included. Returning birds or repeat sightings of the same individual, insofar as these can be judged, are not counted and so are not added to totals.
- Total number in the current year (2021).

Occasionally, adjustments to totals have been made to take account of late retrospective acceptances by SBRC and local committees, or when corrections are detected from Excel spreadsheet totals, which are displayed here www.the-soc.org.uk/bird-recording/sbrc-species-analysis

Immediately below the header line is a table of accepted Scottish records for 2021, with details. For those species assessed locally in the Northern Isles (Shetland, Fair Isle and Orkney), full details of accepted Northern Isles records are not given. Instead, they are summarised as a separate table or in the text.

For all taxa, information is also provided about pre-2021 records that were not included in previous reports. These are presented in reverse chronological order. Records assessed by SBRC are listed in full, otherwise only summary information is provided.

It should be noted that records of individual birds reappearing at the same location in subsequent years can be accepted by Local Recorders without submission to SBRC; full details of these returning birds are nonetheless provided in this report for completeness. Revised and/or corrected details are also provided for some pre-2019 records, published previously.

For each record listed in full the following information is provided:

- Year.
- Recording area www.the-soc.org.uk/bird-recording/local-recorders-network
- Location(s). In the case of some recording areas, individual islands or component administrative areas are also named.
- Number of birds if more than one, with age and/or gender if known.
- 'Returning' if applicable.
- Date(s). Note that the use of a date range does not necessarily imply that a bird was confirmed to be present at the location or observed throughout; in some cases, it may have been observed only on the first and last dates and may even have moved elsewhere.
- 'Found dead' or 'died' if applicable.
- 'Trapped' if applicable.
- Use of DNA analysis to aid identification.
- Existence of a photograph, video or audio recording, if this formed part of the assessment process.
- Names of observers, in alphabetical order. Every effort has been made to name only those people who played a part in finding and/or identifying the bird. However, if no submission was made by these observers, the submitter of the record is also credited: if the submitter was the Local Recorder this is shown as '*per* Local Recorder'. All other observers are covered by the use of '*et al.*'.
- Details and location of specimen if preserved in a museum, with specimen accession number if available.
- Additional sightings of the same bird at a different location, or a cross-reference to additional sightings in a different recording area or year. Where a bird is said to be the same, this is usually a presumption based on the judgment of the observer, Local Recorder and/or SBRC.

The table of records is followed by the main text of the species account. At the end of each account, a brief summary of global breeding and wintering distribution, with mention of relevant subspecies to Scotland, is given in parentheses.

Species coverage

A list of records assessed by SBRC and considered to be 'not proven' can be found in **Appendix 1**. **Appendix 2** summarises the involvement of different committees in the assessment of the taxa on the SBRC List each year for the period 2017–21. **Appendix 3** lists older records assessed and accepted by SBRC for which species totals are not available.

SBRC

SBRC was set up in 1984 as a subcommittee of the Scottish Ornithologists' Club (SOC) Council. Its role is to assess records of species that are rare in Scotland but not rare enough in Britain to be assessed by BBRC. Current members are Mark Lewis (Chairman), Jim Dickson, Rob Fray, Graham Sparshott (from November 2021), Dave Pullan (up to November 2021), Chris Rodger, David Steel and Mark Warren. Chris McInerny is non-voting Secretary and Bob McGowan is non-voting Museum Consultant. For more information about SBRC see www.the-soc.org.uk/bird-recording/about-sbrc

Records accepted by SBRC are announced on the SOC website as soon as they are processed at www.the-soc.org.uk/bird-recording/recent-decisions, and thereafter formally published in annual reports, such as this, in the June issue of *Scottish Birds*.

On publication the accepted record details are also added to Excel spreadsheets which list all records for SBRC species. These Excel spreadsheets display the data chronologically by recording areas, and graphically both by year from 1950 to 2021 and seasonally by 10-day periods. Examples of the graphs have been used in SBRC Reports published in *Scottish Birds*, with one in this report. The SBRC species Excel spreadsheets have been placed on the SOC website at www.the-soc.org.uk/bird-recording/sbrc-species-analysis, where they can be downloaded; they are updated annually following publication of the SBRC Report. The SBRC and SOC encourage interested parties to use these SBRC species Excel files which are a convenient way to analyse and interrogate SBRC data, but we ask that SBRC Reports published in *Scottish Birds*, such as this, are cited as a way to acknowledge SBRC as the source of the data.

Acknowledgements

First and foremost we are grateful to all observers who submitted records of Scottish rarities to Local Recorders and SBRC during the period. Without their efforts to find and record these birds the report would not exist. We owe a particular debt of gratitude to those who gave permission for their excellent photographs to be reproduced here.

We thank the following Local Recorders for their assistance in compiling, checking and correcting records for this report: Yvonne Benting, Ian Broadbent, Paul Collin, Jon Cook, Martin Cook, Jim Dickson, Iain English, Rob Fray, Sinclair Manson, Russell Neave, Scott Patterson, Chris Pendlebury, John Poyner, Graham Sparshott, Stephen Welch, and Val Wilson. We are particularly grateful for the co-operation of the Northern Isles recorders Rob Fray (Shetland, Fair Isle) and Russell Neave (Orkney) in helping to compile summaries for locally assessed species and also Yvonne Benting (Outer Hebrides) for Great Shearwater *Ardenna gravis* records. We very much appreciate the help of Stephen Hunter in managing the SBRC pages on the SOC website, uploading accepted SBRC records on the recent decisions page www.the-soc.org.uk/bird-recording/recent-decisions and the SBRC species Excel spreadsheets www.the-soc.org.uk/bird-recording/sbrc-species-analysis We thank Keith Naylor and Mark Wilkinson for comments on the manuscript; and thank Keith Naylor for corrections to SBRC species Excel spreadsheets.

Systematic list of accepted records

Black Brant *Branta bernicla nigricans*
1: 2: 1

Table 1. Accepted record of Black Brant in Scotland, 2021.

2021:	**Highland** Broadford River mouth & Glas Eilean, Skye, Skye & Lochalsh, adult, 27–29 April, photo (N. Bennet *et al.*) (*Scottish Birds* 41: 360–362).

Black Brant is extremely rare in Scotland, with just three previous records, and the last two both in 2012 (McGowan *et al.* 2014).

The 2021 individual was found at Broadford River mouth on the Isle of Skye, Highland with it moving to nearby Glas Eilean (Bennett & McMillan 2021). A careful examination of the bird established that it was the North American subspecies of Brent Goose, which is possibly over-looked and under-recorded in Scotland.

(Breeds in north-western Canada, Alaska and eastern Siberia, and wintering mostly on the west coast of North America from southern Alaska to California, but also some in east Asia, mainly Japan.)

Plate 83. Alpine Swift, Fife Ness, Fife, 25 March. © *Rob Cargill*

Alpine Swift *Tachymarptis melba*
34: 11: 1

Table 2. Accepted record of Alpine Swift in Scotland, 2021.

2021:	**Fife** Fife Ness, 25 March, photo (R. & J. Cargill).

Alpine Swift is a very rare visitor to Scotland, seen usually between mid-April and late July. Spring occurrences involve overshoots from mountain breeding grounds on the European continent, while those in summer relate to wandering non-breeders. There are very few autumn records.

The Fife Ness record was the first for the Fife recording area, with this species also not yet noted on the nearby Isle of May. Previously, just two have been seen during March in Scotland (Outer Hebrides 2012 and Clyde 2017). Alpine Swift is an early spring migrant to its mountainous European breeding areas, with this individual likely an overshoot. The bird remained for just 30 minutes, and was only seen by the two lucky finders. Many Fife 'listers' are hoping that the next for the recording area lingers long enough to allow them see it.

(Nominate *melba* breeds in north Africa and southern Europe from Iberia to the Middle East, moving to southern Africa in winter. Nine other subspecies in the Indian subcontinent and Africa.)

Stone-curlew *Burhinus oedicnemus*
29: 13: 1

Table 3. Accepted record of Stone-curlew in Scotland, 2021.

2021:	**Fair Isle** Udi Geo & various locations, second-calendar-year or older, 11 July, photo (M. Hellicar *et al.*).

Stone-curlew is a very rare visitor to Scotland; there were just 42 observations to the end of 2020 with almost half of these in the Northern Isles, and the remainder scattered across the country mostly along the east coast. There is a peak in occurrence in late May and early June, although birds have been seen at all times of the year (McInerny & McGowan 2022).

The sole 2021 record is a typical island location for this species in Scotland, though the mid-summer date is more unusual being the first Scottish July record, and suggests a wandering non-breeder.

Plate 84. Stone-curlew, Udi Geo & various locations, Fair Isle, second-calendar-year or older, 11 July 2021. © *Max Hellicar*

(Nominate *B. o. oedicnemus* breeds in open habitats in southern Europe east to the Caucasus, extending as far north as England and Poland; migrates south to winter in Spain and North Africa. Five other subspecies.)

White-rumped Sandpiper *Calidris fuscicollis*
69: 144: 2

Table 4. Accepted records of White-rumped Sandpiper in Scotland, 2021.

2021: **Lothian** Aberlady, second-calendar-year or older, 26 August (K. Gillon).
Shetland Virkie, Mainland, second-calendar-year or older, 22–24 July, photo (R. Riddington *et al.*).

Plate 85. White-rumped Sandpiper, Virkie, Mainland, second-calendar-year or older, 22–24 July 2021. © *Roger Riddington*

White-rumped Sandpiper is a scarce but annual visitor to Scotland from North America, with most observations in late summer and autumn on the Outer Hebrides.

Both 2021 records were second-calendar-year or older in July and August with, unusually, no first-calendar-year birds seen later in the year.

(Breeds in North America at high latitudes, migrating to winter in Brazil, Argentina and Chile.)

Lesser Yellowlegs *Tringa flavipes*
34: 47: 7

Table 5. Accepted records of Lesser Yellowlegs in Scotland, 2021.

2021: **North-East Scotland** Loch of Strathbeg, first-calendar-year, 30 September to 13 October, photo (M. Sullivan *et al.*).
Outer Hebrides Loch Stiapabhat, Isle of Lewis, first-calendar-year, 29 September to 5 October, photo (*per* Local Recorder).
Orkney Loch Bewan, North Ronaldsay, first-calendar-year, 7–10 September, photo (A. Whitehouse *et al.*).
Orkney Sandsheen & Holland House, North Ronaldsay, first-calendar-year, 13–15 October, photo (T. Gale *et al.*).
Orkney North Loch, Sanday, 19–21 December, photo (R. Neave *et al.*).
Shetland Grutness, Mainland, second-calendar-year or older, 6–7 June, photo (P. Moss *et al. per* Local Recorder).
Shetland West Voe, Papa Stour, first-calendar-year, 29 September to 6 October, photo (R. Riddington, R. Tallack *et al.*); same Loch of Melby, Mainland, first-calendar-year, same as Papa Stour, 1 October, photo (K. Wilson).

Lesser Yellowlegs is a rare visitor to Scotland from North America. The majority of birds are found in late summer and autumn, with smaller numbers in spring; and there are observations in about half of the recording areas, though with almost 24% of records in the Outer Hebrides.

This species continues to be seen regularly in Scotland in very small numbers, mostly on the Outer Hebrides and Northern Isles, although 2021 revealed the tenth record for North-East Scotland and the fourth for Loch of Strathbeg.

(Breeds in North America at higher latitudes. Migrates to winter in southern USA, south through the Caribbean, Central and South America to Tierra del Fuego.)

Caspian Gull *Larus cachinnans*
0: 12: 2

Table 6. Accepted records of Caspian Gull in Scotland, 2021, and an additional record for 2013.

2021: **Fife** Guardbridge, second-calendar-year, 29 October, photo, ringed (Yellow P:PT4) as a pullus/nestling 9 May 2020 at Wyspa Na Rz.Wisła, Kępa Nadbrzeska, Otwock, Mazowieckie, Poland (F. Todd).
Lothian undisclosed site, Midlothian, second-calendar-year, 25 March to 8 April, photo (N. Milligan).
2013: **Dumfries & Galloway** Newbie, Annan, second-calendar-year, 23 September, photo (J. Wright).

Caspian Gull is extremely rare in Scotland. Occurrences have been from late autumn to spring. Most observations have been in coastal East Lothian, amongst flocks of gulls.

It is now known that a regular movement of the species takes place each year through England, with most recorded in the south and east. The majority are immatures present in summer and autumn having moved west from their Eastern European breeding areas.

However, Caspian Gull remains very rare elsewhere in the UK. Under-recording of this difficult-to-identify species is also likely, especially immatures (McInerny 2010).

This species was last seen in Scotland during 2018. Two were noted in 2021, with the one in Fife being a ringed bird. It was marked as a pullus/nestling in Poland at a breeding colony at Kępa Nadbrzeska on 9 May 2020 near Otwock, Mazowieckie (Gull Research 2023), and subsequently seen in France at Sonzay rubbish dump, Centre-Val le Loire, on 22–24 December 2021.

(Breeds at inland lakes in Eastern Europe and the Middle East, wintering mostly in the eastern Mediterranean, though with smaller and increasing numbers reaching western maritime Europe.)

Yellow-legged Gull *Larus michahellis*
12: 33: 2

Table 7. Accepted records of Yellow-legged Gull in Scotland, 2021.

2021: **Angus & Dundee** Invergowrie Bay, sub-adult, 12–15 March; same **Perth & Kinross** Invergowrie Bay, 12–15 March, photo (M. Wilkinson) (*Scottish Birds* 42: 272–274).
Clyde Balgray Reservoir, third-calendar-year/fourth-calendar-year, **from 2020** to 20 February, photo (J.J. Sweeney *et al.*).
Fife Leven, second-calendar-year, 10 May, photo (M. Wilkinson *et al.*) (*Scottish Birds* 42: 272–274).

Yellow-legged Gull is very rare in Scotland, although found throughout the country usually in groups of other large white-headed gulls, often Lesser Black-backed Gulls *Larus fuscus*. Birds have been found at all times of the year, sometimes remaining for extended periods, with a number of individuals returning to the same locations in consecutive years. However, the species is probably under-recorded being challenging to identify, particularly immatures.

It seems likely that most if not all records of Yellow-legged Gulls in Scotland refer to the nominate subspecies *L. m. michahellis*, which has a Mediterranean and south-west European distribution including England (McInerny 2009). However, observers should be aware that one record in Scotland of Yellow-legged Gull of the subspecies *L. m. atlantis* from the Atlantic islands has been accepted by the British Ornithologists' Union Records Committee (BOURC) and BBRC as the first for Britain (Stoddart & McInerny 2017). All potential records of this subspecific taxon, which breeds

on the Azores, Madeira and possibly the Canaries, should be sent to BBRC (**Appendix 2**).

This species remains very rare in Scotland with surprisingly few along the east coast, although the two found during 2021, in Fife and on the Angus & Dundee/Perth & Kinross border, suggest that the species may be overlooked (Wilkinson 2022a).

(Nominate *michahellis* breeds mainly from south-west Europe east to the Black Sea, with immatures dispersing widely in winter as far north as Britain and the Baltic. *L. m. atlantis* breeds on the Azores, Madeira and possibly the Canaries, wandering south to north-west Africa.)

White-winged Black Tern *Chlidonias leucopterus*
59: 28: 1

Table 8. Accepted record of White-winged Black Tern in Scotland, 2021, and an additional record for 2016.

2021: **Moray & Nairn** Loch Spynie, adult, 2–6 June, photo (K. Lynch *et al. per* Local Recorder).
2016: **Outer Hebrides** Loch a' Chinn Uacraich ('Coot Loch'), Benbecula, adult, 13–14 May, photo (*per* Local Recorder).

White-winged Black Tern is a rare visitor to Scotland, mostly observed along the east side of the country and on islands between late spring and late autumn.

(Breeds in central and Eastern Palearctic areas, migrating south to winter in Africa, Australasia and the Indian subcontinent.)

Wilson's Petrel *Oceanites oceanicus*
2: 2: 0

Table 9. Accepted records of Wilson's Petrel in Scotland, 2021.

2021: **At Sea** [Outer Hebrides] 58.43809, -8.501641, 68 km N of St Kilda and 88 km WNW of Aird Uig, Isle of Lewis, 15 July, photo (N.T. Keogh *et al.*).
At Sea [Shetland] second-calendar-year, 10 August, photo (P. Harris, W.T.S. Miles, R. Riddington, R. Tallack *et al.*).

Wilson's Petrel is an extremely rare visitor to Scotland with just four records prior to 2020 (McInerny & McGowan 2022).

The success of finding this species in Scottish waters during 2020 by chartering a boat to visit pelagic waters in the North Atlantic off Shetland (McInerny & McGowan 2022), was repeated in 2021. Another was seen from a boat far out to sea west of St Kilda, Outer Hebrides. As both records were 'At Sea' they are not included in SBRC totals.

(Oceanic. Three subspecies, nominate *O. o. oceanicus*, *O. o. exasperates* and *O. o. chilensis*, all widespread across the southern oceans. It is the world's most numerous seabird. Breeds on the Antarctic continent and offshore islands of South America. Trans-equatorial migrants occur in all oceans. The two subspecies *O. o. oceanicus* and *O. o. exasperates* are thought to migrate into the North Atlantic; although either could occur in Western Palearctic waters, Irish and Icelandic specimens have been identified as *O. o. exasperates*.)

Cory's Shearwater *Calonectris borealis*
c. 228: 41: 2

Table 10. Accepted records of Cory's Shearwater in Scotland, 2021, and an additional record for 2020.

2021: **Outer Hebrides** Brèibhig (Brevig), Barra, 5 August (B.A. Taylor).
Orkney Dennis Head, North Ronaldsay, 4 September (A.F. McNee).
2020: **Lothian** Skateraw, 16 August (J.D. Wilson).

Cory's Shearwater is a rare visitor to Scottish waters, recorded near-annually, with most seen off North Ronaldsay, Orkney and the Outer Hebrides during the late summer and early autumn. A few enter the North Sea where they are observed moving along the east coast. Although an increase in sightings from the mid-1990s to the mid-2000s occurred, numbers since have decreased, with about two or less seen annually, and none were seen in 2010, 2012, 2015 and 2019.

The observation in Scotland, for the first time, of the closely related and very similar Scopoli's Shearwater *Calonectris diomedea* during August 2020 (McInerny & McGowan 2022), raised the issue of whether more of this species were present and being mis-identified as Cory's Shearwaters. However, Scopoli's Shearwater,

based on its range and numbers, is likely to be much rarer in Scottish waters than Cory's. Therefore, SBRC has decided to take a pragmatic approach and accept records as Cory's Shearwater as the default species, as birds seen in Scotland are most likely to be *C. borealis*.

(Breeds on the Azores, Canary Islands and other nearby Atlantic islands, with the closely related Scopoli's Shearwater *C. diomedea* breeding in the Mediterranean. Both species occur in North Atlantic waters in autumn and are on the British List, but most are assumed to be Cory's, with Scopoli's recorded in Scottish waters just once.)

Great Shearwater *Ardenna gravis*
c. 522 (1950–2004): 9,242: 4 (excluding 'At Sea' records)

Table 11. Accepted records of Great Shearwater in Scotland, 2021, and an additional record for 2020.

2021: **Fife** Fife Ness, 21–22 August (K.D. Shaw, J. Wilson).
Highland Strathy Point, Sutherland, 18 August (P. Stronach).
Outer Hebrides Rubha Àird a' Mhuile (Rubha Ardvule), South Uist, 7 September (J. Kemp).
Outer Hebrides Lochboisedale–Mallaig ferry, 20 September (S. Pinder).
2020: **Shetland** Off Muckle Flugga, Unst, 16 August, photo (A. Irvine *et al. per* Local Recorder).

Great Shearwater was rarely seen in Scotland until many were observed during 2005–07, with a highest annual count a staggering 8,935 recorded in 2007. Since then, however, no more than six have been recorded in any one year, if 'At Sea' records are discounted; none were seen in 2010, 2012, 2016 and 2019. This underlines the exceptional nature of the influxes witnessed during 2005–07.

The species is a late summer and autumn visitor, with most sightings from North Ronaldsay, Orkney, and a few from the Outer Hebrides and along the east coast of mainland Scotland; the 2021 observations followed this pattern.

(Breeds on South Atlantic islands and carries out a clockwise loop migration in the North Atlantic outside the breeding season. In the north-east Atlantic occurs most regularly off the south-west coast of Ireland in late summer and autumn.)

Plate 86. Great Shearwater, off Muckle Flugga, Unst, Shetland, 16 August 2020. © *A. Irvine*

Cattle Egret *Bubulcus ibis*
3: 27: 6

Table 12. Accepted records of Cattle Egret in Scotland, 2021, and an additional record for 2011.

2021: **Angus & Dundee** Friockheim & Keptie Pond, Arbroath, 9–21 November, photo (M. Caunt *et al. per* Local Recorder).
Dumfries & Galloway Martingirth Farm, New Abbey, 24 January, photo (B.D. Henderson).
Highland Kingussie, Badenoch, Strathspey & Lochaber, 5–16 November, photo (M. Coleman *et al.*).
Shetland Gremista, Lerwick, Mainland, three on 31 October, one to 1 November, photo (D. Stove *et al. per* Local Recorder); **same** Shetland, Voeside & Hoversta, Bressay, one, 1–3 November.
2011: **Clyde Islands** Clauchlands, Arran, second-calendar-year or older, 8 August, photo (M. Christie *per* Local Recorder).

Cattle Egret is very rare in Scotland although since 2007 increasingly more are being found, with birds seen every year since 2013. This follows the large increase in numbers present in England, where over 200 appeared in 2007, with the species first breeding in 2008; a second influx occurred in 2016 resulting in further breeding and flocks of 51 and 87 observed in Devon and Somerset during 2018 (McInerny & McGowan 2019).

Observations of this species continue to increase in Scotland, with five seen during 2021, including the second records for both

Plate 87. Cattle Egret, Friockheim & Keptie Pond, Arbroath, Angus & Dundee, 9–21 November 2021. © *Mark Caunt*

the Highland and Angus & Dundee recording areas. The 2011 record, only recently submitted to SBRC, was the first for the Clyde Islands recording area.

(Occurs widely in sub-tropical and temperate areas throughout the world, the European population being centred on the Mediterranean, extending north to central and western France, with increasing numbers of records farther north. Largely a short-distance migrant.)

Black Kite *Milvus migrans*
19: 37: 4

Table 13. Accepted records of Black Kite in Scotland, 2021.

2021: **North-East Scotland** Collieston & Cotehill to Meikle Loch, Ythan Estuary & Forvie, fifth-calendar-year or older, 4–7 May, photo (J. Burn, P. Crockett *et al.*); same **Fair Isle** Pund & various locations, 16–17 May, photo (M. Hellicar *et al.*).
Orkney Holland, Papa Westray, Westray & Rousay, third-calendar-year or older, 17 April, photo (D. Roche *et al.*).
Orkney Heddle, Firth, Mainland, 25 April, photo (A. Upton, E. Stubbings).
Orkney Colt, North Ronaldsay, 17 May, photo (D. Shepherd *et al.*).

Black Kite is a very rare, though increasing, visitor to Scotland from continental Europe. Most have been seen in spring, from April to June, with far fewer sightings in summer and autumn (Figure 1). There have also been instances of summering, and a single case of hybridization with Red Kite *Milvus milvus*. Occurrences have increased in recent years; there were 41 during 2007–21 (annual mean 2.7) following just nine in the period 1997–2006 (annual mean 0.9).

Plate 88. Black Kite, Pund & various locations, Fair Isle, 16–17 May 2021. © *Alex Penn*

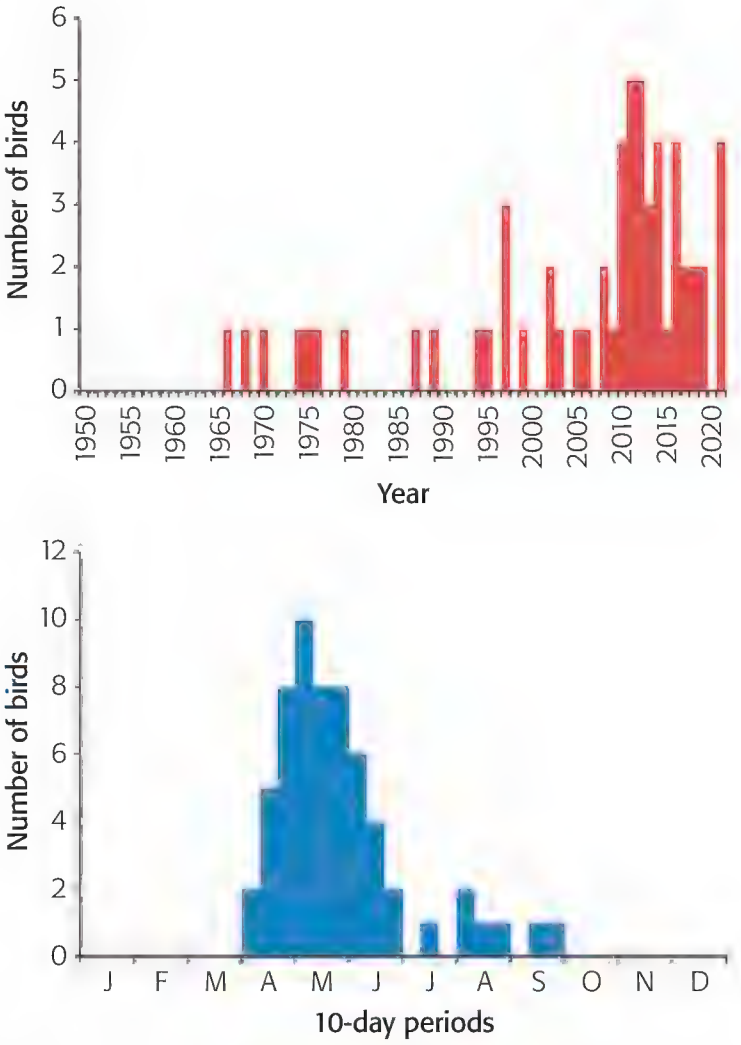

Figure 1. Annual and seasonal occurrence of Black Kite in Scotland by 10-day periods, 1950–2021.

The 2021 records are typical for this species, being on the east coast and Northern Isles, although it is fascinating that the bird first seen in North-East Scotland was subsequently re-found as it moved through Fair Isle ten days later; this was established on plumage similarities revealed by photographic images.

(Nominate *migrans* breeds throughout most of Europe except the far north; winters in sub-Saharan Africa. Other subspecies elsewhere in the Old World.)

Plate 89. Woodchat Shrike, Aith, Mainland, Shetland, first-calendar-year, 30 September to 12 October 2021. © *John Forbes*

Woodchat Shrike *Lanius senator*
86: 42: 7

Table 14. Accepted records of Woodchat Shrike in Scotland, 2021.

2021: **Clyde** Ardmore Farm, female, 12 June, photo (D. Cameron *et al.*) (*Scottish Birds* 42: 73–74).
Fair Isle Auld Haa, second-calendar-year or older, male, 9 September to 3 October, photo (D. Gornall *et al.*).
Highland Corrimony, Inverness-shire, 9–11 June, photo (C. McKay, C. Miller *et al.*).
Isle of May 3 June (M. Quintin *et al.*).
Orkney Well Park, Papa Westray, 5–6 June, photo (D. Roche *et al.*).
Shetland Everland, Fetlar, second-calendar-year, male, 4–8 June, photo (D. Bywater *et al.*).
Shetland Aith, Mainland, first-calendar-year, 30 September to 12 October, photo (H.J. Murphy, H.E. Ramm, J. Shergold *et al. per* Local recorder).

Woodchat Shrike is a rare, but annual since 2011, passage migrant to Scotland, with most in the Northern Isles. Adults and sub-adults are seen in spring as overshoots from their European continental breeding areas, with dispersing juveniles recorded in autumn.

This species is being observed in increasing numbers in Scotland, with the seven records during 2021 consistent with this pattern. Most are along the east coast or in the Northern Isles, so the bird in Clyde was more unusual: it was just the third for the recording area, with the last in May 1996 (Cameron & McInerny 2021).

(Nominate *L. s. senator* breeds from north-west Africa, Iberia, France and Belgium south to Turkey; *L. s. badius* on Mediterranean islands; and another subspecies from Turkey to Iran. Winters in sub-Saharan Africa.)

Woodlark *Lullula arborea*
68 (1950–2004): 31: 0

Woodlark is rare in Scotland, found mostly in late autumn and early winter in the Northern Isles. There has been one instance of attempted breeding in Angus & Dundee during 1993 (Forrester *et al.* 2007). Since 1950 the majority of observations have been on the Northern Isles, with 70% on Fair Isle and Shetland. The last mainland records were at Peffer Sands, Scoughall (Lothian) during 15–24 February 2008, and at Ferry Hills, North Queensferry (Fife) on 10 November 2018.

The only sighting in 2021 was the individual that overwintered around Twingness, North Ronaldsay (Orkney) (McInerny & McGowan 2022), which remained until 16 February. As such, this observation is not counted towards the species total.

(Two subspecies. *L. a. arborea* breeds in north and central European areas from western Russia through Finland and Norway to England, where present north to Yorkshire. The other subspecies breeds from Iran and the Middle East through southern Europe to north-west Africa. Most populations move south to wintering areas, with more northerly populations moving the farthest.)

Short-toed Lark *Calandrella brachydactyla*
285: 111: 4

Table 15. Accepted record of Short-toed Lark in Scotland, 2021, and an additional record for 2013. Northern Isles records are summarised separately in Table 16.

2021: **Outer Hebrides** Mullach Sgar, Ruabhal & Baile, Hiort (Hirta), St Kilda, 29 September to 13 October, photo (W.T.S. Miles, C. Nisbit).
2013: **Outer Hebrides** Rubha Àird a' Mhuile (Rubha Ardvule), South Uist, 12 October, photo (*per* Local Recorder).

Short-toed Lark is found annually in Scotland in very small numbers, mostly in spring and autumn, with the majority of observations in the Northern Isles where records are assessed locally. It is very rare elsewhere, particularly on the mainland.

Table 16. Accepted records of Short-toed Lark in the Northern Isles, 2021.

	Number of birds		Date range	
	Spr.	Aut.	Spr.	Aut.
Fair Isle	-	1	-	1–4 Oct
Orkney	-	-	-	-
Shetland	1	1	22–29 Jun	10 Oct

The sighting on St Kilda was the fifth for the archipelago and only the second in autumn. The bird lingered for 14 days, the second longest-staying individual of only ten occurrences in the Outer Hebrides. The Northern Isles records followed the expected pattern.

(Eight subspecies, with the subspecies seen in Scotland and the UK undetermined. Breeds widely in dry sandy areas from southern and eastern Europe to the Middle East and western China, with populations migrating to winter in Africa, the Middle East and India.)

Red-rumped Swallow *Cecropis daurica*
40: 56: 4

Table 17. Accepted records of Red-rumped Swallow in Scotland, 2021.

2021: **Orkney** Twingness, North Ronaldsay, second-calendar-year or older, 31 May to 1 June, photo (G. Gay, M. Warren *et al.*).
Outer Hebrides Groigearraidh (Grogarry) Lodge, South Uist, 13 May, photo (S.E. Duffield *et al.*).
Shetland Vidlin, Mainland, two, 9–10 June, photo (D.C. Wege *et al. per* Local Recorder); **same** Brae, Mainland, two, 11 June, photo (A.H.J. Harrop *et al.*).

Red-rumped Swallow is observed in Scotland annually in very small numbers from April through to November, mainly along the east coast and on islands. An increase in frequency over the last 20 years is thought to reflect a northward expansion of the European continental breeding range. Around 66% of sightings in Scotland have occurred within this period, and the last blank year was 1996.

Two individuals of an eastern subspecies, either *C. d. daurica* or *C. d. japonica*, have been observed in Scotland: one on Orkney and then Skye, Skye & Lochalsh, Highland, in June 2011, and the other 'At Sea' *c.* 50 km east of Lybster, Caithness in May 2018 (McInerny & McGowan 2020).

Plate 90. Red-rumped Swallow, Twingness, North Ronaldsay, Orkney, second-calendar-year or older, 31 May to 1 June 2021. © *Mark Warren*

The four occurrences in 2021 were typical of timing and location for Scotland. The sighting in South Uist was the eighth for Outer Hebrides.

(Eight subspecies. Breeds widely from southern Europe eastwards across the Palearctic region, and in sub-Saharan Africa. *C. d. rufula* breeds in Europe and the Middle East, with nominate *daurica* and *japonica* in Asia. Northern populations are migratory wintering in Africa and southern Asia. In recent years its range has expanded into more northern and western European areas.)

Cetti's Warbler *Cettia cetti*
1: 2: 2

Table 18. Accepted records of Cetti's Warbler in Scotland, 2021.

2021: **Fife** Kilconquhar Loch, 10–11 December, audio (M. Wilkinson) (*Scottish Birds* 42: 281–283).
Upper Forth Kinneil, first-calendar-year, female, 13 November, photo, trapped (I. Livingston *et al.*) (*Scottish Birds* 42: 281–283).

Cetti's Warbler is an extremely rare vagrant to Scotland, with just three previous records, one dead and two alive, from Lothian in October 1993, the Outer Hebrides in October 2014 and an undisclosed site in 2016 (McGowan & McInerny 2018). These birds could have derived from either the European continent, or from the English and Welsh population that has expanded rapidly to reach *c.* 1,800 singing males/ territories in recent years following a peak of *c.* 2,000 ten years ago (Holling *et al.* 2016).

Plate 91. Cetti's Warbler, Kinneil, Upper Forth, first-calendar-year, female, 13 November 2021. © *Iain Livingston*

The two occurrences in 2021 were first records for the recording areas; late autumn dates are suggestive of juvenile dispersal. The Upper Forth bird was trapped, allowing a straightforward identification; in contrast, determination of the Fife individual relied almost entirely on sound recordings (Wilkinson 2022b).

(Nominate *cetti* breeds in southern Britain, and eastwards from Morocco through to Bulgaria; mainly sedentary. Two other subspecies in central and eastern Asia Minor and from Kazakhstan to western China.)

Radde's Warbler *Phylloscopus schwarzi*
46: 42: 5

Table 19. Accepted records of Radde's Warbler in Scotland, 2021, and an additional record for 2020.

2021: **Isle of May** 7–8 October, photo (A.W. Lauder, K.M. Morton, K.D. Shaw *et al.*).
Shetland Kergord, Mainland, 5 October, photo (D. Bradnum *et al.*).
Shetland Sullom, Mainland, 5 October, photo (H.J. Murphy, H.E. Ramm, J. Shergold *per* Local Recorder).
Shetland Hoswick, Mainland, 19 October (W.A. Carter).
Shetland Sullom, Mainland, 1 November, photo (P. Sclater *per* Local Recorder).
2020: **Caithness** Duncansby, 6–8 October, photo (D. Brown, J. Eaton, R. Hughes *et al.*).

Radde's Warbler is a rare, now almost annual autumn visitor to Scotland, with the majority of occurrences in the Northern Isles, principally Shetland, and the remaining few along the east coast.

Plate 92. Radde's Warbler, Isle of May, 7–8 October 2021. © *David Steel*

The sightings on Isle of May and Shetland were typical for this species, these recording areas having the highest number of records. The observation in Caithness in 2020 was the first for the recording area. The increased frequency of occurrences in recent years is marked: the mean number of annual records in the last decade is 3.4, but only 1.4 for the previous decade.

(Breeds from southern Siberia east to Sakhalin and North Korea; migrates to winter in southern China and south-east Asia.)

Dusky Warbler *Phylloscopus fuscatus*
59: 76: 3

Table 20. Accepted records of Dusky Warbler in Scotland, 2021. One Northern Isles record is summarised in the text.

2021: **Fife** Lower Kilminning, 19–22 October, photo, audio (W. Cresswell *et al.*).
Lothian Barns Ness, 18–22 October, photo (M. Williamson *et al.*).

Dusky Warbler is a rare annual visitor to Scotland, with the autumn migration period accounting for all but two sightings. It occurs mainly in the Northern Isles where records are assessed locally. Nearly all other sightings have been along the east coast of mainland Scotland.

Only three Scottish sightings were made in 2021 against a recent trend of a mean of 7.4 birds annually over the preceding decade. Exceptionally, the single bird total for the Northern Isles was fewer than the number seen elsewhere. The Shetland observation was made at Hamnavoe, Lunna on 6–7 October.

(Breeds from western Siberia to China, wintering from the Himalayas to south China; two subspecies, with European vagrants belonging to nominate *P. f. fuscatus*.)

Greenish Warbler *Phylloscopus trochiloides*
157: 142: 5

Table 21. Accepted record of Greenish Warbler in Scotland, 2021. Northern Isles records are summarised in the text.

2021: **Isle of May** 23–27 May, photo, trapped (S. Langlois *et al.*).

Greenish Warbler is a rare but annual migrant to Scotland, increasingly regular over the past few decades (McInerny & McGowan 2022). It is mostly seen in late August and early September, with smaller numbers in late May and early June; about 70% of sightings have been in the Northern Isles where records are assessed locally.

All sightings in Scotland in 2021 were at typical dates and localities. In Shetland, responsible for 40% of Scottish records of Greenish Warbler, birds were observed at Noss on 10 August, Out Skerries on 13 August, Hamnavoe, Foula on 22–25 August, and Sumburgh Hotel, Mainland on 18–20 September.

The total of five is lower than the mean annual total of 11 birds over the last decade.

(Four subspecies. *P. t. viridanus* breeds from the Baltic east through Russia to central Siberia and north-west China, wintering in the Indian subcontinent and Sri Lanka. Other subspecies breed in central and eastern Palearctic areas, wintering in southern India and northern Indochina.)

Arctic Warbler *Phylloscopus borealis*
164: 126: 9

Table 22. Accepted records of Arctic Warbler in Scotland, 2021.

2021: **Argyll** Balinoe, Tiree, first-calendar-year, 12 September, photo (J. Bowler, K. Gillon) (*Scottish Birds* 42: 77–78).
Fair Isle Midway, first-calendar-year, 27–28 August, photo (S. Arlow *et al.*).
Fair Isle Wirvie Burn, 28 August, photo (D. Gornall).
Orkney Salties, Sanday, 12 September, photo (D. Douglas, M. Lewis *et al.*).
Orkney Gravity, North Ronaldsay, 20 September to 2 October, photo (T. Gale, G. Gay, R. Goater *et al.*).
Shetland Dalsetter, Mainland, 10 September, photo (K. Kelly *et al. per* Local recorder).
Shetland Quendale, Mainland, 11–15 September, photo (R. Riddington *et al.*).
Shetland Aithness, Fetlar, first-calendar-year, 12 September, photo (P. Macklam *et al. per* Local Recorder).
Shetland Quendale, Mainland, 13–14 September, photo (R.M. Fray *et al.*).

Plate 93. Arctic Warbler Dalsetter, Mainland, Shetland, 10 September 2021. © *Roger Riddington*

Arctic Warbler is a rare but annual and increasingly regular autumn migrant to Scotland occurring mostly in the Northern Isles and along the east coast (McInerny & McGowan 2022). It is most frequent in September, with fewer seen in late August and October; very small numbers are seen in late June and July; about 90% of observations have been in the Northern Isles.

The total of nine sightings in 2021 is consistent with the increased frequency in recent years, with a mean annual total of 8.8 birds between 2011 and 2020. All but one were in the Northern Isles. The observation on Tiree was the first record for the Argyll recording area (Bowler 2021).

(Breeds from northern Fennoscandia to the Bering Straits and west Alaska, and south to the Ural Mountains, Mongolia and Korea. Winters from Myanmar to Indonesia and the Philippines.)

Melodious Warbler *Hippolais polyglotta*
53: 28: 6

Table 23. Accepted records of Melodious Warbler in Scotland, 2021, and additional records for 2020.

2021:	**Fair Isle** Observatory, first-calendar-year, 24 August, photo, trapped (D. Gornall *et al.*).
	Fair Isle Burkle, first-calendar-year, 31 August, photo (D. Gornall *et al.*).
	Fair Isle Setter, first-calendar-year or older, 2 September, photo (D. Gornall *et al.*).
	Fair Isle Lower Leogh & Nethertaft, first-calendar-year or older, 6–16 September, photo (D. Gornall *et al.*).
	Fair Isle Utra & Haa, first-calendar-year or older, 8 September, photo (D. Gornall *et al.*).
	Shetland Sumburgh, Mainland, first-calendar-year, 2 November, photo (P.V. Harvey, R. Riddington *et al.*).
2020:	**Orkney** Westness, North Ronaldsay, first-calendar-year, 10–13 August, photo, trapped (G. Gay, D. Shepherd *et al.*).
	Orkney Dennishill, North Ronaldsay, 19 August, photo (G. Gay, D. Shepherd *et al.*).
	Shetland Nurse House, Fetlar, 22 August, photo (B.H. Thomason *et al.*).

Melodious Warbler is a rare, but increasingly frequent, spring and autumn migrant to Scotland recorded in most years. About three quarters of occurrences have been in the Northern Isles.

During the last two decades only two sightings have been made on the Scottish mainland; both were at St Abb's Head, Borders, the first in May 2002 and the second in September 2018.

The six occurrences in 2021 represents the highest annual total in Scotland, and the additional three records for 2020 makes that the equal second-highest with five, the last being in 1992. Over the last decade, the mean annual total is 2.8 birds, double the 1.3 birds for the previous decade. The five consecutive observations on Fair Isle during 2021 are unprecedented; each record was meticulously described in the notes submitted to SBRC, confirming that five different birds were involved.

Plate 94. Melodious Warbler, Sumburgh, Mainland, Shetland, first-calendar-year, 2 November 2021. © *Roger Riddington*

(Breeds in north Africa, Iberia, France, Belgium, and south-west Germany to the north-west Balkans; migrates to winter in sub-Saharan West Africa.)

Nightingale *Luscinia megarhynchos*
139: 38: 2

Nightingale is a rare, but almost annual, passage migrant to Scotland; spring observations predominate. In the Northern Isles claims are assessed locally and Fair Isle and Shetland account for the vast majority of sightings.

Only two observations were made in Scotland in 2021: one at Shalstane, Fair Isle, on 9 May, and the other at Scousburgh, Mainland, Shetland on 3 August and 6 October (trapped on both dates).

The last Scottish mainland occurrence of Nightingale was at Garthdee, North-East Scotland on 7 May 2007.

(Nominate *L. m. megarhynchos* breeds from Morocco and western Europe through North Africa and southern and central Europe to the Ukraine and Turkey; *L. m. golzii* breeds from the Aral Sea to Mongolia (one record in Scotland, and another two in England); and another subspecies from the Caucasus area and eastern Turkey to Iran. Winters in sub-Saharan Africa.)

Plate 95. Red-flanked Bluetail, South Ness, Foula, 29 September 2021 © *Michael McKee*

Red-flanked Bluetail *Tarsiger cyanurus*
15: 85: 8

Table 24. Accepted records of Red-flanked Bluetail in Scotland, 2021, and an additional record for 2020.

2021:	**Fair Isle** South Raeva, 19 October, photo (P.R. Gordon *et al.*).
	Shetland Gorie, Bressay, 3 June, photo, trapped (G. & K. Clements).
	Shetland Skaw, Whalsay, 26 September, photo (J.L. Irvine *et al.*).
	Shetland South Ness, Foula, 29 September, photo (M.J. McKee *et al.*).
	Shetland Hestingott, Mainland, 17 October, photo (A.H.J. Harrop *et al.*).
	Shetland Voe, Mainland, first-calendar-year male, 22–26 October, photo (P.V. Harvey, D. Pointon *et al.*).
	Shetland Swining, Mainland, 27 October, photo (P.A. Harris).
	Shetland Lerwick, Mainland, first-calendar-year/female, 7 November, photo (P. Sclater *per* Local Recorder).
2020:	**Caithness** Biel of Duncansby, John o' Groats, 4 October (G. Garner).

Red-flanked Bluetail is a rare but annual migrant to Scotland, increasingly regular in the last two decades. The vast majority (93%) of sightings in Scotland have been from September to mid-November with a peak in mid-October, and 86% have been in the Northern Isles.

Since 2016 there have been six sightings on mainland Scotland, all in October on the east coast: Borders (St Abb's Head), Fife (Crail), Highland (Tarbat Ness) (all 2016), Caithness (Wick) (2017), North-East Scotland (Rattray Head) (2019), and Caithness (John o' Groats) (2020).

In 2021 seven of the eight sightings were in Shetland, this recording area responsible for 44% of the total number of records. The occurrence on Bressay was the first for June in Scotland. The Caithness sighting in 2020 was only the second for that recording area, the first being a bird at Wick in October 2017.

(Breeds in Finland through Eurasia to Kamchatka and south to Mongolia, China and Japan. Migrates to winter in China and south-east Asia. In recent years its range has expanded into more northern and western European areas.)

Plate 96. Citrine Wagtail, Utra scrape & various locations, Fair Isle, second-calendar-year female, 12–15 May 2021. © *Alex Penn*

Citrine Wagtail *Motacilla citreola*
105: 118: 7

Table 25. Accepted records of Citrine Wagtail in Scotland, 2021.

2021: **Angus & Dundee** Stannochy Quarry, male, 24 April, photo (D. Banister, C. McGuigan) (*Scottish Birds* 41: 282).
Fair Isle Utra scrape & various locations, second-calendar-year female, 12–15 May, photo (M. Hellicar *et al.*).
Fair Isle Da Water, Buness & South Harbour, first-calendar-year, 31 August to 2 September, photo (G. Platt *et al.*).
Outer Hebrides Hiort (Hirta), St Kilda, first-calendar-year, 9 September, photo, audio (W.T.S. Miles, C. Nisbet).
Shetland Spiggie, Mainland, female, 10 May, photo (R.M. Fray, P. Sclater).
Shetland Norwick, Unst, first-calendar-year, 28 September to 2 October, photo (T. Hutton *et al. per* Local Recorder).
Shetland Everland, Fetlar, first-calendar-year, 4 October, photo (L. & M. Sutton *per* Local Recorder).

Citrine Wagtail is a rare but annual spring and autumn migrant to Scotland, increasingly regular since the 1990s, though found mostly on islands. Occurrence is generally in autumn with few seen in spring. The overwhelming majority (83%) have been in the Northern Isles with a further 6.5% in Outer Hebrides. Despite the recent increase in numbers Citrine Wagtail remains an extreme rarity in other parts of the country not being seen in many recording areas.

The seven observations in 2021 were consistent with previous decades' mean annual total of 7.8 birds. The three spring sightings were notable, and the April sighting in Angus & Dundee was the first for the recording area (McGuigan & Banister 2021).

(Nominate *M. c. citreola* breeds in Russia from Kola Peninsula to River Khatanga, south to Himalayas; another subspecies in Iran and Afghanistan. Migrates to winter in China, south-east Asia, the Indian subcontinent and the Arabian Gulf.)

Serin *Serinus serinus*
7: 7: 0

Serin is an extremely rare vagrant to Scotland, with just 12 previous records: four on Fair Isle,

three on Shetland (Unst and Fetlar), two on the Outer Hebrides, and one each in Lothian (Edinburgh), Borders (St Abbs), the Isle of May (McGowan & McInerny 2022). Six were males and six females, with birds being found in April (4), May (6), August (1) and November (1).

During 2021 an adult male bird was observed at Talmine, Sutherland, Highland on 17 May (Drew 2021). This record was initially accepted by SBRC as the identification was confirmed and the bird assumed to have a wild origin. However, another ringed female Serin was observed at Talmine on 5 May 2022 which was deemed to be an escape from captivity. This resulted in a reappraisal of the 2021 record by SBRC; because of doubts about the bird's wild origin, it was found not proven (Appendix 1).

(Breeds from the Canary Islands, North Africa and the Iberian Peninsula to Germany, Denmark and the Middle East. Northern populations migrate south, remaining within the breeding range.)

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Appendix 1

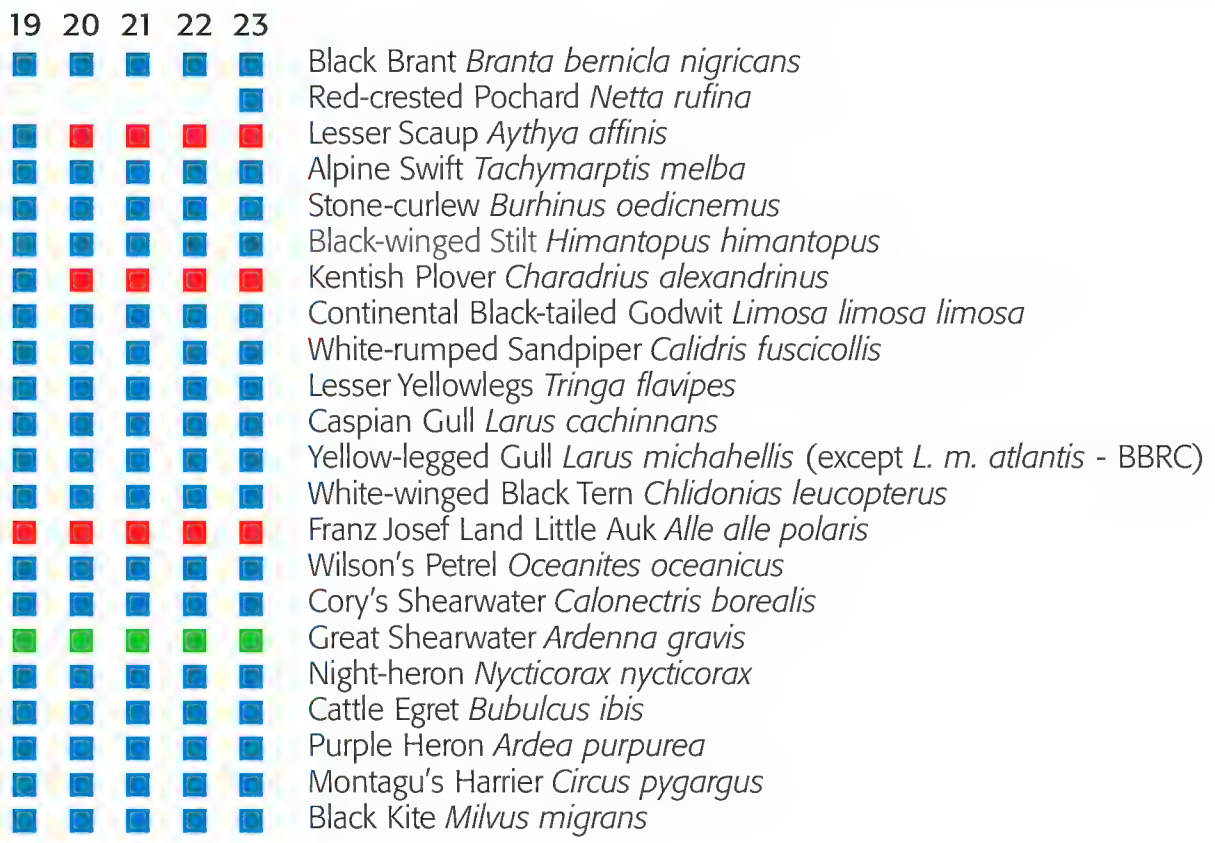
List of records regarded as not proven by SBRC.

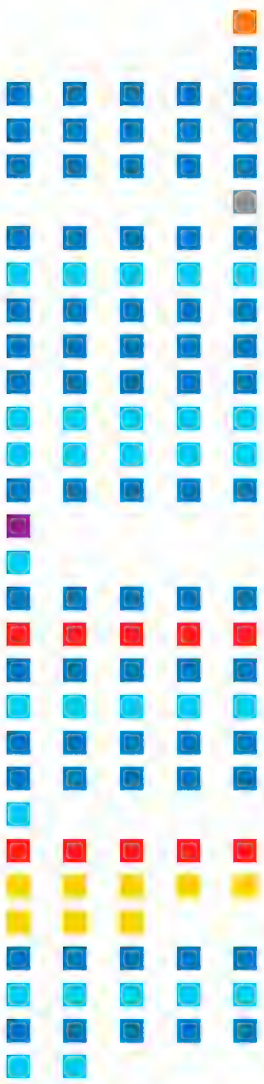
2021: **White-rumped Sandpiper** Skinflats, Upper Forth, 7 September; **Lesser Yellowlegs** Stranraer, Dumfries & Galloway, 11–12 October; **Caspian Gull** Pow Burn, Prestwick, Ayrshire, 9 January; **Cory's Shearwater** Corsewall Point, Dumfries & Galloway, 9 August; **Great Shearwater** St Abbs village, 13 November; **Black Kite** Torness, Inverness-shire, Highland, 26 June; **Black Kite** Ruddon's Point, Fife, 29 July; **Cetti's Warbler** St Ninian's Cave, Dumfries & Galloway, 14 July; **Radde's Warbler** Lettan, Sanday, Orkney, 3–5 October; **Greenish Warbler** Collieston, North-East Scotland, 22 August; **Blyth's Reed Warbler** Barn's Ness, Lothian, 15 October; **Citrine Wagtail** Brough of Gurness, Mainland, Orkney, 10 September; **Parrot Crossbill** two, female, Sullom Plantation, Mainland, Shetland, 16 October; **Serin** Loch Ness area, Highland, 26 May; **Serin** adult male, Talmine, Sutherland, Highland 17 May.

2012: **Melodious Warbler** Kilminning, Fife, 16–18 August.

Appendix 2

Summary of assessment of records by the Scottish Birds Records Committee (SBRC), the SBRC List, and other committees, 2017–21. All species and subspecies assessed by SBRC are included with two exceptions. First, any species or subspecies not on the *Scottish List* is automatically assessed by SBRC if it is not assessed by the British Birds Rarities Committee (BBRC). Second, some species on the *Scottish List* have additional rare subspecies assessed by BBRC that are not shown here. Species and subspecies considered by BBRC are listed on www.bbrc.org.uk/main-information/species-taxa


19 20 21 22 23
Black Brant *Branta bernicla nigricans*
Red-crested Pochard *Netta rufina*
Lesser Scaup *Aythya affinis*
Alpine Swift *Tachymarptis melba*
Stone-curlew *Burhinus oedicnemus*
Black-winged Stilt *Himantopus himantopus*
Kentish Plover *Charadrius alexandrinus*
Continental Black-tailed Godwit *Limosa limosa limosa*
White-rumped Sandpiper *Calidris fuscicollis*
Lesser Yellowlegs *Tringa flavipes*
Caspian Gull *Larus cachinnans*
Yellow-legged Gull *Larus michahellis* (except *L. m. atlantis* - BBRC)
White-winged Black Tern *Chlidonias leucopterus*
Franz Josef Land Little Auk *Alle alle polaris*
Wilson's Petrel *Oceanites oceanicus*
Cory's Shearwater *Calonectris borealis*
Great Shearwater *Ardenna gravis*
Night-heron *Nycticorax nycticorax*
Cattle Egret *Bubulcus ibis*
Purple Heron *Ardea purpurea*
Montagu's Harrier *Circus pygargus*
Black Kite *Milvus migrans*



Little Owl *Athene noctua*
European Bee-eater *Merops apiaster*
Lesser Spotted Woodpecker *Dryobates minor*
Red-footed Falcon *Falco vespertinus*
Woodchat Shrike *Lanius senator* (except *L. s. badius* - BBRC)
Marsh Tit *Poecile palustris*
Woodlark *Lullula arborea*
Short-toed Lark *Calandrella brachydactyla*
Red-rumped Swallow *Cecropis daurica* (except *C. d. daurica* or *japonica* - BBRC)
Cetti's Warbler *Cettia cetti*
Radde's Warbler *Phylloscopus schwarzi*
Dusky Warbler *Phylloscopus fuscatus*
Greenish Warbler *Phylloscopus trochiloides*
Arctic Warbler *Phylloscopus borealis*
Blyth's Reed Warbler *Acrocephalus dumetorum*
Marsh Warbler *Acrocephalus palustris*
Melodious Warbler *Hippolais polyglotta*
Western/Eastern Subalpine Warbler *Curruca iberiae/cantillans**
Dartford Warbler *Curruca undata*
Nightingale *Luscinia megarhynchos* (except *L. m. golzii* - BBRC)
Red-flanked Bluetail *Tarsiger cyanurus*
Citrine Wagtail *Motacilla citreola*
Olive-backed Pipit *Anthus hodgsoni*
Arctic Redpoll *Acanthis hornemanni**
Parrot Crossbill *Loxia pytyopsittacus*
Scottish Crossbill *Loxia scotica*
Serin *Serinus serinus*
Ortolan Bunting *Emberiza hortulana*
Cirl Bunting *Emberiza cirlus*
Little Bunting *Emberiza pusilla*

■ = SBRC ■ = BBRC ■ = SBRC except Northern Isles (Fair Isle, Orkney and Shetland) ■ = SBRC except Fair Isle and Shetland ■ = SBRC except Outer Hebrides ■ = SBRC except Dumfries & Galloway and Borders ■ = SBRC except Borders ■ = SBRC outside core range www.the-soc.org.uk/content/bird-recording/sbrc/identification-of-scottish-and-parrot-crossbills

* From 1 January 2019, all records to be considered by BBRC.

The species and subspecies considered by SBRC listed here are also shown on www.the-soc.org.uk/bird-recording/sbrc-list-past-lists

Appendix 3

Older records assessed and accepted by SBRC for which up-to-date Scottish species and subspecies totals are not available:

Buff-breasted Sandpiper *Calidris subruficollis* - One, Kilmory, Rum, Lochaber, Highland, 13–15 September 2000 (S. Morris).

Rose-coloured Starling *Pastor roseus* - One, adult, Kilmory & Kinloch, Rum, Lochaber, Highland, June 2003 (A. Morris, M. Blunt *et al.*).

Subalpine Warbler *Curruca cantillans* - One, second-calendar-year or older, female, Rubha Àird a' Mhuile (Rubha Ardvule), South Uist, Outer Hebrides, 14 May 2015, photo (*per* Local Recorder).

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What we don't know about birds in Scotland

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Although much is known about the biology of the birds that live in Scotland, it is useful to have up-to-date information on the status of populations, ideally followed up with an understanding of the reasons for any change. Armed with such knowledge, conservation measures may be implemented. Information on bird migrations and habitat requirements can also be helpful for the conservation of species, to ensure that suitable sites in different regions are available at particular times of the year. The requirements for further knowledge are more pertinent nowadays, given that the world is experiencing biodiversity loss as a consequence of habitat loss and an increase in global temperature. There is also a place to fulfil scientific curiosity that may have no bearing on conservation need, because new findings may lead to unexpected routes in the study of birds. This article notes some of the gaps in our knowledge with respect to Scottish birds and highlights a website that is a fuller account of gaps. In these ways, we hope that we can stimulate studies by SOC members and other ornithologists to fill such gaps, and encourage those with bird knowledge in Scotland to engage with the website to improve and update it.

Introduction

Much is known about the biology and status of birds in Scotland, as reviewed in three major accounts: *The Birds of Scotland* (Baxter & Rintoul 1953), *Birds in Scotland* (Thom 1986) and *The Birds of Scotland* (Forrester *et al.* 2007). In the latter publication, the authors of the individual species' accounts offered their perspectives on gaps in our knowledge of regularly occurring species, recognising that there is still much to learn about Scottish birds.

This article highlights some of the gaps in knowledge as listed in Forrester *et al.* (2007) but recognises that many such gaps have been filled since the publication of *The Birds of Scotland.* We also draw attention to a SOC website (https://www.the-soc.org.uk/about-us/knowledge-gaps-database) that highlights where future research effort for each species could be devoted. We hope that this website will be a port of call for those who are interested in carrying out studies of birds in Scotland. We also hope that the website can be interactive through additions, expansions and deletions of topics as knowledge develops. Many areas for further study are within the abilities of keen amateur birdwatchers and bird ringers to contribute to our understanding of particular species, either working as individuals, groups, or collaborating with professionals. We focus especially on those species that are red- or amber-listed as birds of conservation concern within the UK (Stanbury *et al.* 2021), as well as highlighting some species and subspecies where Scotland holds most, or all, of the UK population.

Before addressing some of these knowledge gaps, we describe the key avenues of study that monitor the population status of many of Scotland's birds.

Distribution and numbers

National surveys have been developed by the British Trust for Ornithology (BTO) through atlas projects that provide the mapped distribution of each species during the breeding season and winter (Balmer *et al.* 2013). The run of atlas projects, combined with Holloway's (1996) historical atlas, provide snapshots of the change in distribution of all species, including those species (*e.g.* Corn Bunting *Emberiza calandra*) that are too scarce in Scotland for trends to be reported by other surveys. Several regions have had their own atlas projects, describing species' distributions at a

finer scale than the national atlases, and providing a more in-depth account of local effects on birds: for example, Fife (Elkins *et al.* 2003), North-East Scotland (Francis & Cook 2011) and south-east Scotland (Murray *et al.* 2019). For some species that are rapidly colonising Scotland, such as the Nuthatch *Sitta europaea*, the bird reporting network also helps to describe distributional change (Broadbent & Scott 2021). There are also surveys at varying intervals of individual species of high conservation concern that include a description of distribution and numbers, such as the Golden Eagle *Aquila chrysaetos*, Peregrine *Falco peregrinus* and Capercaillie *Tetrao urogallus* (Hayhow *et al.* 2017, Wilson *et al.* 2018, Wilkinson *et al.* 2018) led by the Royal Society for the Protection of Birds (RSPB) and BTO.

Information on trends in numbers varies across different groups of birds. The BTO/JNCC/RSPB Breeding Bird Survey (BBS) (https://www.bto.org/our-science/projects/breeding-bird-survey) is based on surveys of 1-km^2 plots, providing annual population indices for common birds in Britain, including Scotland (Harris *et al.* 2020, Darvill *et al.* 2020), whilst data accumulated by the Rare Breeding Birds Panel (https://rbbp.org.uk/) provide minimum population estimates for those species numbering less than 2,000 pairs in Britain (Eaton & Holling 2020). The BTO/RSPB/JNCC Wetland Bird Survey (WeBS) (https://www.bto.org/our-science/projects/wetland-bird-survey) captures annual data for wintering waders and wildfowl (Frost *et al.* 2020), whilst Non-estuarine Waterbird Surveys (https://www.bto.org/our-science/projects/wetland-bird-survey/taking-part/non-estuarine-waterbird-survey-iii) provide data for numbers and distribution on sandy beaches and rocky shores at *c.* 10-year intervals. Seabirds have national surveys at varying intervals (the last being in 2015–2022 and yet to be published), backed up by the BTO/JNCC/RSPB Seabird Monitoring Programme (https://www.bto.org/our-science/projects/seabird-monitoring-programme) which covers annual monitoring at several sites (*e.g.* the Isle of May, the North Soutar on the Moray Firth, Fair Isle and Canna) (Swann 2000). Birds of prey are surveyed annually by the Scottish Raptor Study Group network and data are provided to the Scottish Raptor Monitoring Scheme (https://raptormonitoring.org/srms-online) (Etheridge 2013, Challis *et al.* 2022a, b).

Population dynamics

Processes that underlie population change are breeding success (natality) and survival (the opposite of mortality). Movements in (immigration) and out (emigration) of populations are also part of population dynamics, though less often measured. For common birds, the BTO Nest Records Scheme (https://www.bto.org/our-science/projects/nest-record-scheme) collates data from many nest finders, providing data on clutch and brood size and nest survival rates. However, because birds may re-lay or have more than one brood, it is difficult to obtain a measure of annual breeding success per pair. This has been partially overcome through the Constant Effort Sites (https://www.bto.org/our-science/projects/ringing/surveys/ces) scheme whereby bird ringers record the ratio of juveniles to adults captured in late summer, though there are rather few constant effort sites in Scotland. As a measure of breeding success, bird ringers and birdwatchers are also able to obtain juvenile to adult ratios for other groups, such wintering waders and wildfowl where age classes can be distinguished. The BTO also runs the Retrapping Adults for Survival (https://www.bto.org/our-science/projects/ringing/surveys/ras) scheme whereby the return rates of ringed birds provide estimates of survival in projects which target single species.

Cause of population change

Even when there is a good description of a change in numbers and understanding of the population processes (breeding success and/or survival) that underpin the change, the ultimate ecological cause of the population change may not be obvious. A good first step in understanding change is to compare the bird data with possible influencing factors, such as food supply, predation or weather. Such studies may be large scale desk analyses using national data sets, or could be field studies, ideally replicated across multiple sites. Even if one can show that the population change is correlated with another variable, this does not necessarily mean that the

variable causes (often said to drive) the population change. Cause and effect can be tested using field experiments. These have the advantage in that they allow an iterative, adaptive approach so that a proposed cause of population change may be amended - or perhaps even abandoned in favour of another candidate cause - based on the evidence gathered. In practice, however, field experiments happen more rarely than they ideally should do because of the logistical challenges and expense of implementing high-quality experiments at scales relevant to bird population responses to environmental change. A neat recent example of an experimental study to inform bird conservation in Scotland was the RSPB's experiment across Flow Country lochs to test whether reduction of Brown Trout *Salmo trutta* populations through targeted angling could restore lake invertebrate populations as a potential conservation measure for Common Scoter *Melanitta nigra* (Hancock *et al.* 2020).

Movements/migration

Many Scottish bird species are migratory, so populations can be impacted when birds are not in Scotland or are in different parts of Scotland. This presents a challenge to those who wish to study long-distance migrants that refuel at staging sites in several countries. Bird ringing has gone a long way to helping our understanding of bird movements (Wernham *et al.* 2002). However, there are many species groups where ringing has given only a partial understanding. Ringed seabirds for instance are often recovered dead on a shore, biasing our understanding. Species that breed in the Arctic or winter in Africa have little chance of rings being recovered. In recent years, many of these gaps have been filled when data loggers became small enough to be fitted to birds. The large birds (seabirds and waterfowl) were tackled first (*e.g.* Wakefield *et al.* 2017, Wanless & Harris 2012), but as loggers became smaller, waders and even passerines have been tagged (Swann 2012).

Whilst some of this technology is expensive, some tags, such as geolocators, are less expensive and within the budget of Scottish ringing groups. To obtain data from geolocators, a bird has to be recaptured, so that only species that are site faithful to either breeding of wintering quarters are suitable candidates. Fixed listening stations such as Audio Moths and trail cameras that record bird calls by day and night (Francis & Smith 2015), or the Motus Wildlife Tracking System that record signals from tiny tags attached to birds are now being used find out the movements of birds.

Habitat

The broad habitat associations of birds are well known, so most species can be readily classed as, for example, seabirds, farmland birds or woodland birds. However, within these broad definitions it is often unclear how variation in, for example, type of woodland impacts bird densities - or why. Less well known are the fine grain habitat characteristics that birds respond to. Food availability and prey preferences will be key, but are rarely measured. Land management, climate, predation risk and human disturbance can all influence habitat use so should be taken into consideration. Measuring habitat use can range from noting where birds (or their signs) are found (and, equally importantly, not found), to the use of remote telemetry for birds that are difficult to observe, such as nocturnal species.

Pressures

In our rapidly changing world, birds are facing many direct forms of anthropogenic influence, including farming, forestry, fisheries, fish-farms, muirburn, hydro-schemes, wind-farms and leisure activities, as well as indirect effects of climate change and land use that can influence risk from predation. Never has our need for understanding bird populations as an indicator of the environment been so great.

Examples of gaps in knowledge

The account below gives a flavour of some gaps in knowledge for a few species within major groups of birds, though we have not sought to be comprehensive in this overview paper. Some of

these gaps were identified by the species' authors in Forrester *et al.* (2007), and this was our starting point, but others have come to light more recently. A fuller account for each species is provided in the website.

Wildfowl

Much is known about wintering numbers and distribution of swans, geese and ducks in Scotland through the WeBS and Goose and Swan Monitoring Programme (GSMP) (https://www.bto.org/our-science/projects/goose-and-swan-monitoring-programme), but much less is known about our breeding populations (Ogilvie 2011).

The Greylag Goose *Anser anser* and Pink-footed Goose *Anser brachyrhynchus* are the main goose species in Scotland, most of which arrive from breeding grounds in Iceland. Although goose counts are carried out during departure from night roosts, it can be difficult to obtain accurate counts. A better understanding of the use of roost sites and feeding sites (seasonally and between years) would help to monitor populations. For example, there is a mismatch between population estimates and hunting bags (Fredericksen *et al.* 2004), suggesting inaccuracy in one, or both, of the monitoring schemes.

The sizes of the breeding populations of feral Greylag and introduced Canada Geese *Branta canadensis* in Scotland are poorly known. The breeding biology of Canada Geese has not been studied. In particular, their interaction with other waterbirds would be a useful study, especially in relation to competition with native species for nesting sites. This is especially of concern for rarer breeding species such as the Common Scoter and divers.

Barnacle Geese *Branta leucopsis* on the Solway Firth (the Svalbard population), having increased markedly over several decades, have recently seen a substantial drop in numbers due to bird flu. Monitoring the effect of this disease on the population is a priority, given how localised the birds are in winter. With regard to the Greenland population, although the numbers on Islay are well known, further surveys on remote wintering sites along the west and northern coasts would provide knowledge of the entire Scottish population. Compared to the Svalbard population, little is known about the conditions on the breeding grounds of the Greenland population. Scotland now has breeding Barnacle Geese, but little is known about this pioneer population.

It is especially challenging to gather data on sea-ducks. As a result, the origins of wintering Long-tailed Ducks *Clangula hyemalis* and wintering and moulting Common and Velvet Scoters *Melanitta fusca* are poorly known. A better understanding of diet, food supply and disturbance impacts of water-sports could help understand habitat preferences and conservation needs. In winter, flocks of scoter (see also divers) may be out of sight of land. For the small Scottish breeding population of Common Scoters, tagging is revealing the wide range of winter locations, but links with the summer moulting aggregations at sea are unknown.

The breeding Goldeneye *Bucephala clangula* population is concentrated in Strathspey. Its slow spread to other parts of Scotland may be due to unsuitable habitat (despite nest-boxes being made available), or low breeding success, which is not assessed beyond clutch survival. How important are Pike *Esox lucius* in relation to brood survival, an issue that may apply to other species of duck? An update on the survival of nesting Goldeneyes is required in relation to predation, given the spread of Pine Martens *Martes martes* to former parts of its range.

The Red-breasted Merganser *Mergus serrator* and Goosander *Mergus merganser* are both culled in an attempt to protect stocks of young Salmon *Salmo salar*. A study of the survival of ducklings and the subsequent movements and survival of sub-adults may help explain variation in abundance on different rivers, whilst the monitoring of the breeding populations is required to

assess the effect of spring culls. Estimates of the breeding and wintering populations are of unknown accuracy. Counts of moulting flocks, including sex ratios (not easy for moulting birds) could help in documenting trends. More detail is required on winter site fidelity and movements.

Divers and grebes

Although divers and grebes are included in the WeBS, wintering birds are not easy to count, because many feed over deeper water than ducks, so can be far from the shore. Calm weather is required to make satisfactory counts that would complement the WeBS. In addition, coverage is poorer on the west coast. Here, dedicated surveys are required, where we can also obtain better estimates of numbers, including White-billed Divers *Gavia adamsii*.

Breeding numbers of Red-throated Divers *Gavia stellata*, Black-throated Divers *Gavia arctica* and Slavonian Grebes *Podiceps auritus* are known from dedicated surveys (*e.g.* Smith *et al.* 2009). For Red-throated Divers, these tend to be centred on Shetland and Orkney leaving a gap in our understanding of numbers and feeding ecology of mainland breeding birds. A detailed feeding study during the breeding season has been carried out on Black-throated Divers (Jackson 2003) but not on Red-throated Divers.

Ringing studies of divers to describe migrations and survival have concentrated on Red-throated Divers (Okill 1994), again in Shetland and Orkney. Similar work on Black-throated Divers is required. Biometrics of museum specimens indicate the origins of Great Northern Divers *Gavia immer* that overwinter in Scotland (Heubeck *et al.* 1993, Weir *et al.* 1996), but this work could be refined by stable-isotope analyses of feathers. Divers and grebes moult in coastal Scottish waters. Feather collections along beaches could provide information on species present and the timing of moult.

Herons

Gaps in knowledge for the Grey Heron *Ardea cinerea* include information on the numbers in winter and proportion of these that are from overseas. Little Egrets *Egretta garzetta* and Spoonbills *Platalea leucorodia* are examples of the northward spread of new colonists. How they are using their new environment (diet in different seasons, movements and breeding) would show how they are adapting to their new home.

Seabirds

There has been a great upsurge in interest and knowledge about seabirds, partly driven by the need to understand the effects of large-scale changes occurring in the marine environment (Wakefield *et al.* 2017). Warming seas are causing changes in the food web (diet and time of breeding), the climate is changing (more storms), fishery practices are changing (fewer discards) and offshore wind farms are being built. The use of tagging, yielding information on locations and behaviour at sea has been a great boost to helping answer key questions in the face of such changes. These range from GPS tagging that generally provides shorter-term data on breeding birds at a high spatial resolution (a few metres) to geolocator data that can provide year-round information at a low spatial resolution (100 km), so are suitable primarily for describing long-distance migrations. Thus, many of the gaps in knowledge of seabirds offshore have been or are being filled (Wanless & Harris 2012).

A big gap in all seabird research refers to understanding the food supply of many species - fish. This will remain a difficulty even for fishery scientists, who concentrate on species of commercial value. All that seabird enthusiasts can do is monitor what birds bring ashore during the breeding season. Photographs of auks and terns with fish in their bills helps in this regard.

There have been national surveys of seabirds (Lloyd *et al.* 1991, Miles 2013), but those species that visit nesting burrows at night (Storm *Hydrobates pelagicus* and Leach's Petrels *Oceanodroma*

leucorrhoa and Manx Shearwaters *Puffinus puffinus*) remain difficult to census. The use of play-back or infra-red filming helps in this regard, to discover new colonies and nest sites, and supports census methods (Ratcliffe *et al.* 1998, Perkins *et al.* 2018).

It is recognised that there may be regional differences around the coast of Scotland, requiring an ongoing commitment to monitoring key species at a range of sites (numbers, population dynamics, diet and predation) including sites not previously studied. For certain groups (terns) and Black Guillemot *Cepphus grylle*, Razorbill *Alca torda* and Manx Shearwater, predation by Brown Rats *Rattus norvegica* and American Mink *Neovison vison* are known to be important.

Studies of the breeding success and survival of seabirds are carried out at several key sites for multiple species (*e.g.* Canna, Swann 2000). More of these detailed studies are required, including the identification of factors (*e.g.* predators, such as the Brown Rat, Mink, Red Fox *Vulpes vulpes*, White-tailed Eagle *Haliaeetus albicilla* and Great Skua *Stercorarius skua*) affecting breeding success. Species that require a greater level of monitoring are the Manx Shearwater, petrels, Arctic Skua *Stercorarius parasiticus*, Arctic Tern *Sterna paradisaea*, Common Tern *S. hirundo* and Little Tern *Sternula albifrons*.

The impact of the avian flu on some seabird colonies in 2022 has been large, especially for Great Skuas (*e.g.* Camphuysen *et al.* 2022) and Gannets *Morus bassanus* so repeat surveys of the recently completed national seabird census are required to gauge losses.

Inland colonies of Common *Larus canus* and Black-headed Gulls *Chroicocephalus ridibundus* require further surveys, whilst the reason for their decline remains unexplained.

Most ringing of seabirds takes place at breeding colonies. Thoughts should extend to wintering populations of large gulls (Great Black-backed Gull *Larus marinus*, Glaucous Gull *L. hyperboreus* and Iceland Gull *L. glaucoides*), and the extent to which numbers are inflated by migrants, whose origins are poorly known.

Birds of prey

The Scottish Raptor Study Groups and Scottish Raptor Monitoring Scheme provide annual monitoring information on territory occupation and breeding productivity (Etheridge 2013, Challis *et al.* 2022a), and more recently, trends in population size have been produced for 13 raptor species and the Raven *Corvus corax* (Challis *et al.* 2022b). Those species whose numbers or densities in summer are poorly known include the owls. For some of the rarer birds of prey, recent work is improving our knowledge, whilst knowledge about others remains patchy (*e.g.* Hobby *Falco subbuteo*). The Long-eared Owl *Asio otus* must be one of the least studied birds in Scotland.

Much of our knowledge about raptors in Scotland is based on survey and monitoring work focusing on breeding ecology. However, our understanding of the impacts of bird flu and winter ecology of raptors in Scotland is poor. For example, in winter, Scotland receives migrants (*e.g.* Sparrowhawk *Accipiter nisus*, Merlin *Falco columbarius* and Hen Harrier *Circus cyaneus*) but the ratio of migrants to residents is unknown.

Much has recently been discovered about local and long-distance movements and home range use from satellite tags (Golden Eagle, Short-eared Owl *Asio flammeus*), whilst PIT tagging can assess return rates (survival) to nests (Peregrine) (Smith *et al.* 2015). These technological advances are the way ahead for understanding the movements and survival of birds of prey.

Assessing changes in food supply may be a way to help interpret movements, as well as breeding numbers and success. This is particularly the case for raptors (*e.g.* Kestrel *Falco tinnunculus*) and owls (*e.g.* Short-eared Owl) that rely on rodents whose numbers can fluctuate greatly from year to year.

Competition and inter-specific predation (*e.g.* between Golden and White-tailed Eagles) are fields of study that require more effort. This would require knowledge of the changing distribution of nest sites before and after there are changes in the bird of prey community, or by studying changes in nesting behaviour in relation to proximity to intra-guild predators (Lourenço *et al.* 2013). Studies of pellets and prey remains collected at nests sites will identify any inter-specific predation among raptors.

Rails

Of the species of rail in Scotland, three (Water Rail *Rallus aquaticus,* Corncrake *Crex crex* and Spotted Crake *Porzana porzana*) live in dense vegetation, making them difficult to study, but birds can be baited to camera traps (Littlewood & Toney 2016) and calling males can be counted, sometimes with encouragement from the playing of recorded calls. If counts of calling males are carried out systematically, population estimates can be obtained; *e.g.* for Spotted Crake (Gilbert 2002) and Corncrake (O'Brien *et al.* 2006).

Migrations and local movements are poorly known for Water Rail, Spotted Crake, Moorhen *Gallinula chloropus* and Coot *Fulica atra*, though studies with geolocators, passive acoustic recording at breeding sites (Francis & Smith 2015) or during nocturnal migration, or colour-ringing could be enlightening.

Grouse

The Ptarmigan *Lagopus muta millaisi* (an endemic subspecies) faces potential loss or change of its Arctic/alpine habitat through climate change. Therefore, numbers and its habitat require monitoring, recognising that the population is split across mountain ranges, so may have different population dynamics (Bradfer-Lawrence & Rao 2013). Although outside the scope of a study by birdwatchers, collections of feathers could help a DNA study to indicate the degree of connectivity among sub-groups. Likewise, whilst professional ornithologists study Red Grouse *Lagopus lagopus scotica* (also an endemic subspecies) on eastern moors subject to grouse moor management, the status and ecology of Red Grouse on western sites is less well known. Environmental changes affecting Red Grouse include nitrogen pollution affecting Heather *Calluna vulgaris,* increasing Castor Bean (Deer) Tick *Ixodes ricinus* populations, perhaps associated with increasing Red Deer *Cervus elaphus* numbers and/or the frequency of mild winters, and possible incidence of disease (Thompson & Wilson 2017).

The Capercaillie population is at a low level (Wilkinson *et al.* 2018). Possible threats include mounting levels of human disturbance and changes in predation guilds. Although some reasons for the demise of Capercaillies are known (summer rain and predation affecting breeding success and full-grown birds colliding with forest fences) (Moss *et al.* 2000, Summers *et al.* 2004), it is possible that there are others, whilst on-going monitoring of predator abundance and the threat posed by forest fences is required.

The impact of the release of millions of Pheasants *Phasianus colchicus* and Red-legged Partridges *Alectoris rufa* is of considerable concern, either through competing with native birds for food (including any remaining Grey Partridges *Perdix perdix*), the spread of parasites and disease or potentially enhancing the numbers of Red Foxes and Pine Martens. A study of these interactions is urgently required.

Waders

Most waders in Scotland are either red- or amber-listed, giving grave concern for both breeding and wintering numbers in this group. The Arctic biome, which provides the breeding habitats for many species is warming faster than biomes at lower latitudes, indicating that environmental changes may be taking place more rapidly than elsewhere. Many species also migrate considerable distances, making them dependent on multiple sites for breeding, staging, and wintering.

Ringed Plovers *Charadrius hiaticula* and Dunlins *Calidris alpina* are declining on the machair of the Outer Hebrides, but whilst predation by Hedgehogs *Erinaceus europaeus* is a continuing problem, there may be other limiting factors (Calladine *et al.* 2017). Elsewhere in Scotland, there is less knowledge of breeding numbers, breeding success and factors affecting the population dynamics of these species (Rae *et al.* 2011), though numbers at key sites in Strathspey are regularly monitored (Mitchell *et al.* 2009).

Loss of breeding habitat and predation have been linked to the decline in Curlew *Numenius arquata* numbers. A better understanding of how predation and habitat interact is important, especially as this species is one for which the UK, and especially Scotland, has a high level of responsibility for the global population (Brown *et al.* 2015). Whimbrels *Numenius phaeopus* are also declining, so also require further study of the cause, which may be related to factors outside the breeding season. Although there have been studies on other upland breeding waders (Greenshanks *Tringa nebularia*, Golden Plovers *Pluvialis apricaria* and Dunlins), more work is required on factors affecting their habitat, such as muirburn and expansion of forestry (the latter may interact with predation, Wilson *et al.* 2014), whilst the Dotterel *Charadrius morinellus* is the species most likely to be impacted by climate change through the reduction of the extent of Arctic/alpine habitats (Hayhow *et al.* 2015). Within woodlands, the cause of the decline of breeding Woodcocks *Scolopax rusticola* is unknown.

For winter populations, numbers and timing of movements of inland wintering Lapwings *Vanellus vanellus*, Golden Plovers and Woodcocks are poorly known, as are non-estuarine species that are covered largely by the Non-estuarine Waterbird Surveys at *c.* 10-year intervals. More frequent monitoring at key sites is required. Numbers of several non-estuarine wintering populations of waders are declining (Ringed Plover, Turnstone *Arenaria interpres* and Purple Sandpiper *Calidris maritima*) but reasons for these declines are unknown.

Pigeons, woodpeckers and Kingfisher

Better information on the distribution and abundance of breeding pigeons, Kingfishers *Alcedo atthis*, Wrynecks *Jynx torquilla* and Green Woodpeckers *Picus viridis* is required, whilst the same applies to wintering Kingfishers, Rock Doves *Columba livia*, Stock Doves *C. oenas* and Wood Pigeons *C. palumbus*. Factors limiting the breeding success of Cuckoos *Cuculus canorus* require further investigation.

Identifying immigrant Wood Pigeons and Great Spotted Woodpeckers *Dendrocopos major* from the resident populations in Scotland presents a challenge (Dougall & McGowan 2021). Monitoring annual and seasonal numbers of Stock Doves, Wood Pigeons and mixed and true Rock Doves combined with ringing would enhance knowledge on these poorly studied species. Photographs of flocks would assist in the description of plumage variation in Rock Doves to determine the influence of feral doves in different regions.

The impacts of farming (reduction in certain crops, intensification and loss of winter stubble) will affect the pigeon species (especially Wood Pigeons), all of which require monitoring alongside descriptions of changes in farming practices. This issue, of course, also applies to many other groups (waders, finches, sparrows, buntings and thrushes) that use farmland in winter.

Passerines

The Passerine group includes a large range of sub-groups: wagtails, chats, thrushes, swallows, warblers, tits, corvids, *etc.* Some of these show contrasting population trends, with some species showing declining populations in England but increasing in Scotland (*e.g.* Willow Warbler *Phylloscopus trochilus*). Such contrasts provide an opportunity to investigate possible causes of the differences (*e.g.* Morrison *et al.* 2015), or at least describe how the species are faring in Scotland.

There are also island subspecies of several passerines in Scotland that have been largely neglected for study, including the Hebridean Song Thrush *Turdus philomelos hebridensis* and island subspecies of the Wren *Troglodytes troglodytes*. A comparative study of the ecology of the different subspecies of Wren would be interesting, ideally backed up with further genetic studies to determine their phylogenetic relationships (Shannon *et al.* 2014). Counts have been made of the subspecies on St Kilda and Fair Isle, but counts (or density estimates) in different habitats are absent for the other subspecies. Data on the breeding biology and movements of the Hebridean subspecies of the Song Thrush *Turdus philomelus* would be of great interest (McGowan 2012).

For Spotted Flycatchers *Muscicapa striata* and Redstarts *Phoenicurus phoenicurus*, information on breeding densities in different habitats are required. For the Redstart, does grazing and nest site availability influence their density? For the Stonechat *Saxicola torquata* and Whinchat *S. rubetra*, better estimates of their numbers are required, as is information on their movements.

Better information is required on Dipper *Cinclus cinclus* numbers and how these may relate to water quality.

It is not known how Tree Pipits *Anthus trivialis* respond to different types of management in different types of woodland. Assessing densities in different woodland types would be an important first step, given the current high level of woodland expansion through planting.

Amongst the tits, information on the densities in different habitats (urban versus rural, or among different woodland types) is sparse. For example, do food supplies determine the different densities of Crested Tits *Lophophanes cristatus* occurring in different types of woodland (Caledonian pinewood versus conifer plantations)?

Densities of Goldcrests *Regulus regulus* in different habitats and areas of Scotland in summer and winter are required. This will help determine if there are local movements and provide a better measure of the number of immigrants in winter.

The Treecreeper *Certhia familiaris* is a poor disperser, so could be subject to habitat fragmentation and differing predation pressures associated with habitat differences. Estimates of densities in different habitats could address this.

Little is known about the biology of Rock Pipit *Anthus spinoletta*: breeding ecology, numbers and movements. Criteria for separation of the two subspecies present in winter are needed (Martin 2022).

The numbers and densities with respect to habitats and movements of Lesser Redpolls *Carduelis cabaret* are poorly known. These could be studied in relation to the spatial and temporal availability of birch *Betula* spp. and conifer seeds in woodland.

Breeding population sizes of Chaffinches *Fringilla coelebs*, Greenfinches *Chloris chloris*, Bullfinches *Pyrrhula pyrrhula*, Linnets *Linaria cannabina*, Siskins *Carduelis spinus* and redpolls are poorly known compared with the Twite *Linaria flavirostris* (Wilkinson & Wilson 2010, Wilkinson *et al.* 2018). For wintering birds, numbers and movements are poorly known for Bramblings *Fringilla montifringilla*, whilst previous studies of wintering Snow Buntings *Plectrophenax nivalis* (Banks *et al.* 1991), Twite (Corse *et al.* 2011) and Linnet (Swann *et al.* 2014) are worth repeating in the future to assess any changes, particularly for the Snow Bunting in relation to climate change.

For crossbills, a monitoring scheme that includes the recording of call types within the three species is required. If coupled with the monitoring of cone crops of different conifers, local movements in relation to seasonal and annual availability of food supplies could be assessed. The

matching of calls with biometrics is an on-going requirement, given that calls may change (Summers 2020). There are gaps in our year-round understanding of the ecology of Scottish Crossbills *Loxia scotica*, especially in relation to forest management.

In the crow family, data on numbers in summer and densities in different habitats are poorly known. For example, what are the comparative densities of Jays *Garrulus glandarius* in oak and conifer woodland, and what do they eat in conifer woodland? The interaction between Carrion *Corvus corone* and Hooded Crows *C. cornix* within their zones of hybridisation would be a fruitful line of enquiry, as would the behaviour and flock composition of non-breeding flocks of crows and Ravens.

The winter population sizes, trends, annual fluctuations, habitat associations and diet of the Fieldfare *Turdus pilaris* and Redwing *T. iliacus* are poorly known, whilst the ratio of the population sizes of the two subspecies of Redwing (*iliacus* and *coburni*) has not been assessed. Population estimates are required in winter of the numbers of continental Blackbirds *Turdus merula* and Song Thrushes. In terms of breeding species, the population size and subspecies of breeding Redwings in Scotland is unknown, whilst the Mistle Thrush *Turdus viscivorus* has had little attention.

Although there has been much ringing of Waxwings *Bombycilla garrulus* showing movements within Britain, their origins remain largely unknown.

For Swallows *Hirundo rustica* and martins, has there been a reduction in suitable nesting habitat (either urban or rural)? Although many have been ringed and recovered in Africa, a better understanding of the migrations of martins would benefit from studies using geolocators. Crucially, information is required on the changes in the insect food supply of swallows, martins and Swifts *Apus apus* (a non-passerine with a similar life style).

The Knowledge Gaps and Areas for Priority Survey (KGAPS) database

A searchable online database of knowledge gaps for Scotland's birds can be found at https://www.the-soc.org.uk/about-us/knowledge-gaps-database. This database will be updated annually, with both the removal of gaps filled by recent research, and the addition of new gaps as we become aware of their existence. Annually, SOC will consult experts in species and species groups to ensure that the database is as up-to-date as possible, but also welcome contributions from all members of the birding and ornithological communities. Suggested amendments to the database can be emailed to birdingofficer@the-soc.org.uk.

Discussion

The examples we have provided of some knowledge gaps for Scotland's birds show that there is still much to learn. Many species are of conservation concern (Stanbury *et al.* 2021), so more effort should be devoted to filling gaps in knowledge of these species if studies could inform conservation policy and practice to support their conservation.

Many gaps relate to population size. These are key gaps in knowledge that could be tackled by birdwatchers at different levels of expertise. Those whose skills are identification and counting can certainly carry out surveys and monitoring, though some thought is required in the design of surveys (see Gilbert *et al.* 1998 and Bibby *et al.* 1992 for guidance). Those that are skilled at nest finding can monitor breeding success, whilst bird ringers can carry out migration and survival studies.

The role of museums should not be forgotten as a resource for studies on a broad range of topics (Green & Scharlemann 2003, Joseph 2011, Marini *et al.* 2020). Larger institutions hold substantial collections of skins, eggs and skeletons, represented by specimens collected over extended time-series and across broad geographical areas. Whilst traditional studies on biometrics and plumage are still common, DNA sampling is now routinely carried out and analysis of stable isotope

signatures has opened fresh research opportunities. Such sampling (utilising tiny amounts of tissue from individual specimens) means that even museums with small numbers of specimens can usefully contribute to research projects.

When designing a study of birds, thought should be given to the integration of ancillary information, such as habitat, diet, food supply and interactions with predators, prey or competitors, because ancillary data may help to explain the information gathered on the birds. Collaboration with specialists in other areas of research would be valuable in this respect. For example, it would be useful to integrate population studies of raptors with small mammal studies to better understand how food supply may be affecting these bird species.

An ultimate aim should be the publication of results, so that they can be disseminated. *Scottish Birds* is an excellent outlet for reports on monitoring studies of local areas and information on migrant birds obtained at coastal observatories (*e.g.* Fair Isle, Miles *et al.* 2014).

Many long-term studies started before the general use of computers so there may be unpublished data that are now of historic value. A plea is made that such data are not lost. Ideally, such data should be archived and/or made available for analysis and publication. The SOC, and other organisations, provide grants for the study of birds, so this could include the analysis of data already collected. The relevant grants available from the SOC are the Endowment Fund (managed by the SOC Research & Survey Committee) for the field studies and The Birds of Scotland Fund that supports larger publications.

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Changes in breeding wader populations of the Uist machair and adjacent habitats between 1983 and 2022

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Periodic extensive surveys of machair and associated habitats on the west coast of North Uist, Benbecula and South Uist have documented marked changes in the composition of an important breeding wader assemblage. Within a study area of 123 km^2 there had been a 25% decline in the total number of breeding waders recorded between 1983 and 2022. Dunlin and Ringed Plover had shown the most marked declines while Oystercatcher and Redshank both increased. Changes in breeding numbers up to 2014, the date of the previous extensive survey, had tended to be more negative in a southern zone (South Uist and Benbecula) where introduced Hedgehogs are important predators of wader eggs. However, changes between 2014 and 2022 were less clearly defined between areas with and without Hedgehogs, with some marked declines in a northern zone without Hedgehogs (North Uist and Berneray) and also in Benbecula. By comparison, there was a general pattern of increasing or stable numbers on South Uist. At a time when populations of breeding waders are declining across much of Britain, the assemblage remains exceptionally important with an average of about 66 apparent pairs of breeding waders per km^2 across the survey area in 2022. There is a need to better understand the different drivers of change, for example land-use and predation.

Introduction

Relative to their area, islands can support disproportionately high populations of breeding waders, especially where there are suitable habitats and a restricted suite of predators (Calladine *et al.* 2022). This holds true for the west coast habitats of South Uist, Benbecula, North Uist and islands in the Sound of Harris, which continue to support exceptionally large concentrations of breeding waders at a time when breeding waders are in serious decline in many other parts of Britain (Fuller *et al.* 2013, Harris *et al.* 2022). A first extensive survey of the machair and associated habitats in this region (hereafter referred to as 'Uist') in 1983 suggested it held between a third and a quarter of the UK breeding populations of Dunlin *Calidris alpina* and Ringed Plover *Charadrius hiaticula* respectively (Fuller *et al.* 1986). Subsequent repeat surveys in 2000, 2007 and 2014 recorded widespread losses of both those species but mixed fortunes for Oystercatcher *Haematopus ostralegus*, Redshank *Tringa totanus*, Lapwing *Vanellus vanellus* and Snipe *Gallinago gallinago* (Jackson *et al.* 2004, Fuller *et al.* 2010, Calladine *et al.* 2015). Hedgehogs *Erinaceus europaeus* were introduced to the southern part of South Uist in 1974 and subsequently spread throughout the west coastal areas of that island, to Benbecula, Grimsay and onto the southern part of North Uist (Jackson *et al.* 2004, Jackson 2007). Hedgehog exclusion experiments, the recording of nest predation events, and contrasting changes in populations between areas with and without Hedgehogs, provide compelling evidence that population declines were at least partly driven by predation of eggs by these introduced mammals (Jackson & Green 2000, Jackson 2001, Jackson *et al.* 2004, Calladine *et al.*, 2015, 2017). However, changes in soil chemistry, moisture, salinity and vegetation characteristics within the machair systems, potentially linked with their management may also be involved, possibly acting through alterations to food supplies (Calladine *et al.* 2014, Fuller 2018).

In response to the likely impacts of nest predation and land use changes on the assemblage of breeding waders of the Uist machair, there have been programmes to remove Hedgehogs from parts of the area (e.g. Calladine *et al.* 2015) and initiatives to secure and improve the conservation status of machair habitats (e.g. Machair LIFE+ undated). To inform future conservation initiatives and to assess the status of this breeding assemblage of waders in Scottish, British and European contexts, ongoing monitoring is clearly important, especially given the wider pressures currently facing breeding waders more widely. Here we report on an extensive survey of approximately 137 km^2 of machair and associated habitats on the Uist west coast in 2022, which includes 123 km^2 that had been surveyed periodically four times since 1983.

Methods

Transect surveys were carried out between 29 May and 10 June 2022 based on a single visit and using the same methods (Reed & Fuller 1983), survey area and comparable timings as during four previous extensive surveys in 1983, 2000, 2007 and 2014. Where possible, observers walked parallel transect lines 100 to 150 m apart. Where physical obstructions prevented this, a constant-effort-search approach was adopted whereby a single observer walked to within 100 m of all areas to give equivalent survey coverage. The timing was chosen to coincide with a period of high detectability when most waders are expected to have dependent young and give alarm calls as transects are walked. The positions of all waders were recorded onto large-scale (roughly 1:10,000) maps using standard codes and the number of apparent breeding pairs estimated using species-specific criteria as described by Reed & Fuller (1983). For a species-specific discussion of the limitations of the method used in surveying machair waders see Fuller and Jackson (1999). In view of these known limitations, we refer to the counts as 'apparent pairs'.

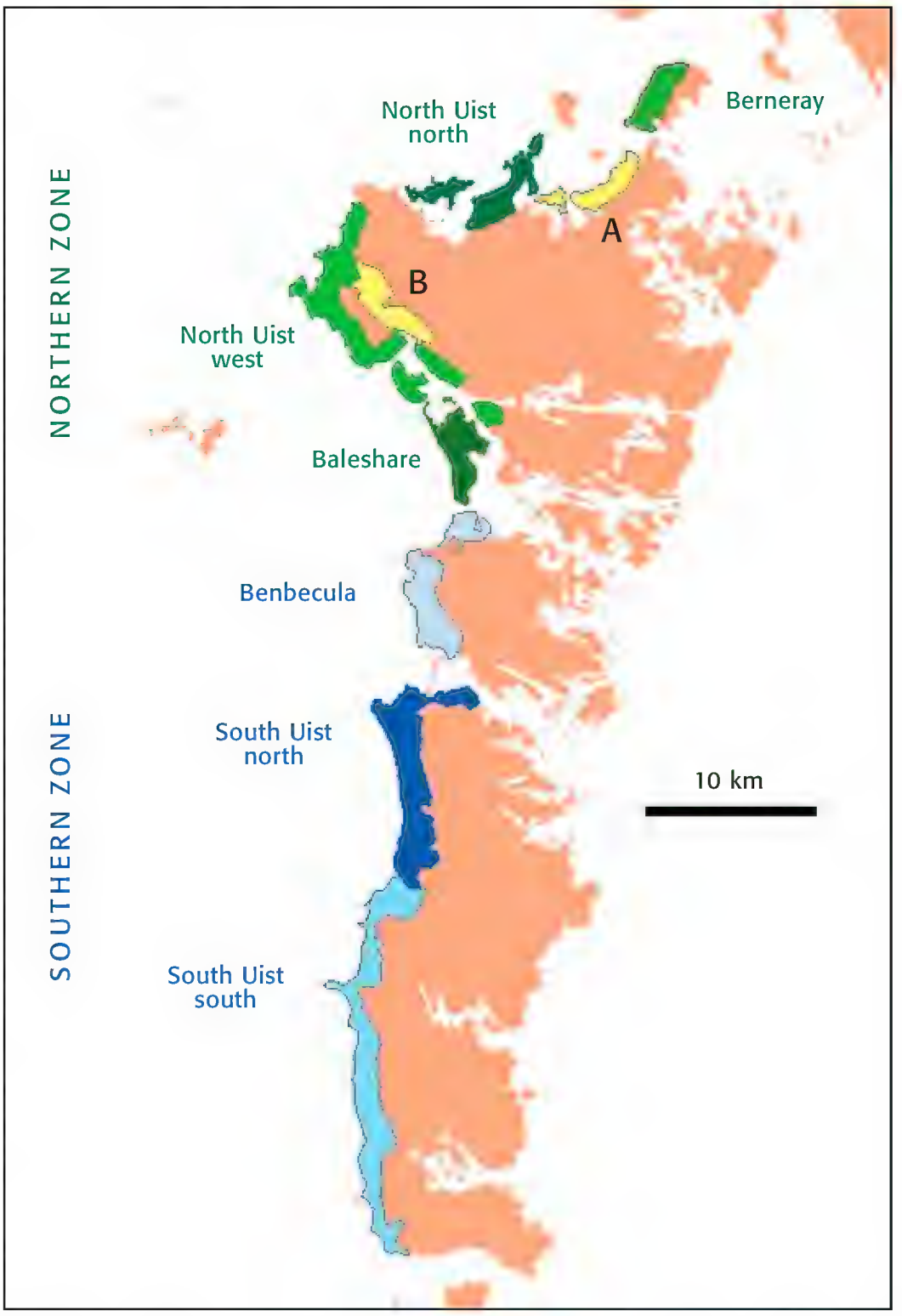

Figure 1. Machair and associated habitats that were surveyed for breeding waders in May–June 2022. The Southern Zone (including Benbecula and southwards) are areas where Hedgehogs have remained widespread and relatively abundant. The Northern Zone (including Baleshare and northwards) are areas where Hedgehogs have remained scarce or absent. Additional areas that were not included in all three of the previous extensive surveys are 'A' (North Uist 'extra') and 'B' (North Uist 'reseeds'). The different shading indicates the areas listed in Table 1.

The area surveyed included nearly all of the machair plain and some associated 'blackland' habitats (Ritchie 1979, Angus 2004, Jackson *et al.* 2004, Pakeman *et al.* 2011). In addition to the 123 km^2 which was surveyed in common with the three earliest extensive surveys, a further 14 km^2 of machair, blackland and reseeded pasture on North Uist first surveyed in 2014 was also surveyed in 2022 (Figure 1). Numbers of apparent pairs and proportional changes are given separately for southern and northern zones of the study which relate to areas currently with and without Hedgehogs (Figure 1).

Results

A total of 8,216 apparent breeding pairs of the seven most numerous breeding waders were counted in 2022 within the areas common to all four previous surveys (Table 1), representing an average of 67 apparent pairs per km^2. Since the first extensive survey in 1983, overall numbers had declined by 25% and since the previous survey in 2014 by 9%. A further 674 apparent pairs were recorded in the additional areas of North Uist that were surveyed first in 2014, a decline of 18% (Table 1). Scarce species recorded in 2022 but not included in the above summary were Common Sandpiper *Actitis hypoleucos* (two apparent pairs compared to eight in 2014), Greenshank *Tringa nebularia* (one apparent pair with none in 2014) and Red-necked Phalarope *Phalaropus lobatus* (one apparent breeding male compared to four in 2014).

The greatest overall proportional declines since 1983 were of Ringed Plover and Dunlin (75% and 71% respectively), though their numbers had changed little since 2014 (Table 1, Figure 2). Snipe declined overall by 32% since 1983, Lapwing by 28% and Redshank by 7%. In contrast, Oystercatcher increased by 65% and, although numbers remain relatively low, the increase in Curlew *Numenius arquata* since their first being recorded during these surveys in 2014 to 48 apparent pairs in 2022 is notable. For much of the period since 1983, the patterns of change in abundance have differed between the zones with and without Hedgehogs (Figure 2). Population trends were generally more favourable in areas without Hedgehogs, but this pattern was less strong in 2022. For example, the deviation in trends between the two zones was most marked for Redshank which had increased by 91% between 1983 and 2014 in the northern, Hedgehog-free zone compared to a decline of 22% in the southern zone with Hedgehogs. However, in 2022 the difference had reduced to +32% in the Hedgehog-free zone and remained at -22% in the zone with Hedgehogs (Figure 2) with a marked reduction in numbers apparent in the northern zone but not the southern. Similar lessening of differences in population changes between zones from 2014 to 2022, due to more negative changes in the northern zone compared with the southern zone, were apparent also for Snipe, Ringed Plover and Lapwing. Oystercatcher had increased across both zones since 1983, by 44% in the Hedgehog-free zone and 81% in the areas with Hedgehogs, though numbers in the former had declined since 2014 (Figure 2). Ringed Plover and Dunlin are unique in showing near linear declines in both zones since 1983 though the decline of Dunlin has been greater in the southern than the northern zone, whereas it is very similar in the two zones for Ringed Plover.

There appears to be a general recent divergence of population trajectories between South Uist and the areas to the north. Within the southern zone, Oystercatcher, Ringed Plover, Lapwing and Redshank showed consistent increases on South Uist north and South Uist south between 2014 and 2022. However, this contrasted with Benbecula where each of these species declined over the same period (Table 1). In the northern zone, there was considerable consistency in the direction of population changes between 2014 and 2022 across the four constituent areas (Table 1). Oystercatcher and Ringed Plover each declined by at least 20% in three of the northern areas, while Lapwing and Redshank each declined by at least 25% in all four areas. The numbers of apparent pairs were the lowest recorded over the five extensive surveys in Benbecula, Baleshare and North Uist west, and the second lowest in North Uist north and Berneray.

Table 1. Counts of apparent breeding pairs of waders on the Uist machair in 1983, 2000, 2007, 2014 and 2022. Each area is shown in Figure 1. Common Sandpiper, Greenshank and Red-necked Phalarope also occurred in some years in very small numbers but are not shown in the table.

Area/Year	Oystercatcher	Ringed Plover	Lapwing	Dunlin	Snipe	Redshank	Curlew	TOTAL
South Uist south								
1983	349	559	841	425	225	671	0	3,070
2000	415	202	657	96	47	376	0	1,793
2007	559	241	943	127	90	495	0	2,455
2014	518	123	561	34	58	400	0	1,694
2022	606	144	611	30	123	427	18	1,959
South Uist north								
1983	363	558	739	699	95	396	0	2,850
2000	439	284	374	372	72	197	0	1,738
2007	467	220	699	256	40	324	0	2,006
2014	699	93	376	198	73	292	0	1,731
2022	808	158	523	208	87	371	6	2,161
Benbecula								
1983	216	170	289	220	56	221	0	1,172
2000	291	99	278	134	43	196	0	1,041
2007	216	116	322	127	71	279	0	1,131
2014	323	49	428	49	47	306	1	1,203
2022	270	34	227	48	45	212	5	841
Baleshare								
1983	178	110	228	96	25	98	0	735
2000	330	55	334	94	28	165	0	1,006
2007	198	60	198	71	15	158	0	700
2014	297	29	219	43	17	138	0	743
2022	227	34	128	51	3	103	0	546
North Uist west								
1983	506	293	645	221	55	313	0	2,033
2000	677	130	615	146	51	424	0	2,043
2007	556	169	521	163	53	443	0	1,905
2014	642	91	430	70	44	392	1	1,670
2022	646	58	324	51	44	297	3	1,423
North Uist north								
1983	166	157	126	57	8	37	0	551
2000	275	142	233	72	7	88	0	817
2007	216	88	289	40	4	140	0	777
2014	438	80	286	40	15	202	0	1,061
2022	282	44	185	61	14	136	0	722
Berneray								
1983	57	200	105	161	2	38	0	563
2000	161	58	225	90	9	92	0	635
2007	131	71	188	73	2	117	0	582
2014	269	67	246	94	2	195	0	873
2022	184	42	143	88	0	107	0	564
North Uist 'extra'								
2014	175	4	98	8	9	102	0	396
2022	145	14	111	12	12	84	0	378
North Uist 'reseeds'								
2014	182	0	59	32	26	118	11	428
2022	123	0	56	6	10	85	16	296

Note: Data from 1983–2014 is taken from Fuller 1986, Jackson *et al.* 2004, Fuller *et al.* 2010 and Calladine *et al.* 2015. Correction factors used in some earlier publications of the 1983 and 2000 counts for Dunlin and Snipe are removed to permit direct comparison. Counts for Vallay (reported separately in some earlier publications) are here included in those for North Uist north. The counts for Curlew in 2014 were incorrectly reported in Calladine *et al.* 2015.

Changes in breeding wader populations of the Uist machair and adjacent habitats between 1983 and 2022

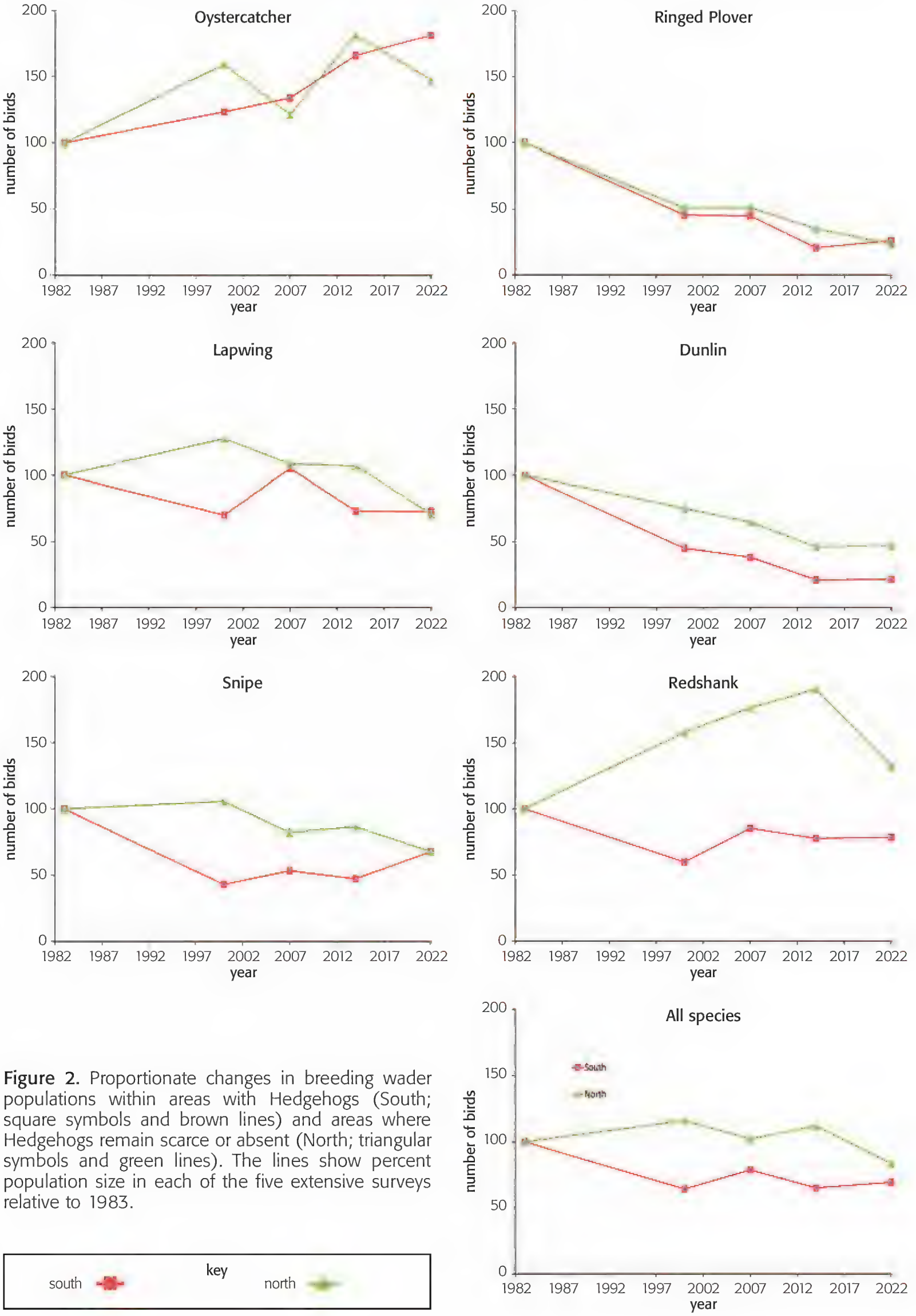

Figure 2. Proportionate changes in breeding wader populations within areas with Hedgehogs (South; square symbols and brown lines) and areas where Hedgehogs remain scarce or absent (North; triangular symbols and green lines). The lines show percent population size in each of the five extensive surveys relative to 1983.

Discussion

Across the areas included in all five extensive surveys, there had been a 25% decline between 1983 and 2022 in the overall abundance of the seven most numerous breeding wader species. The rates of change differed between species however, resulting in a large change in the composition of the breeding wader assemblage. Single-visit surveys of waders, as used in the extensive surveys of machair, are not designed to detect small changes in population sizes or within small subsets of the survey area. Factors affecting detectability are expected to account for up to 20% of the variation between counts for Lapwing, Dunlin and Redshank (Fuller & Jackson 1999). It is expected, however, that broad trends apparent over wider areas will be representative of real changes.

Populations of waders have decreased across many parts of their global range (e.g. Zöckler *et al.* 2003, Bart *et al.* 2007, Amano *et al.* 2010) as those of some species have done on Uist. However, the long-term increases in some other species on Uist contrasts with their widespread declines across Scotland and the rest of Britain (Fuller *et al.* 2013, Hughes *et al.* 2021, Harris *et al.* 2022). The relatively recent establishment of Curlew as a breeding species within the survey area, and their increase to 2022, contrasts markedly with their declining status across much of their range (e.g. Brown *et al.* 2015). Based on the most recent published estimates for their breeding population across Britain (Woodward *et al.* 2020) it is estimated that the 137 km^2 Uist survey area in 2022 supported 10% of Britain's breeding Ringed Plover, 8% of Redshank, 3.5% each of Dunlin and Oystercatcher and 2.5% of Lapwing. While there are always many vagaries associated with such national population estimates, which should therefore be treated with caution (e.g. Brouwer *et al.* 2003, Hewson *et al.* 2018), the assemblage of breeding waders of the Uist machair and associated habitats clearly remain important and as such, a better understanding of the factors driving the changes is needed.

Between 1983 and 2014, population changes tended to be more negative in the southern zone (with Hedgehogs) than in the northern zone (mostly without Hedgehogs) consistent with the hypothesis that nest predation by Hedgehogs was a limiting factor for breeding waders on Uist. However, subsequent population declines for most species in Benbecula and areas to the north since 2014, relative to little change or moderate increases in South Uist are of both interest and concern. We can be reasonably confident that this spatial divergence in population change is not an artefact arising from observer differences covering the areas because different groups and individuals recorded similar contrasting patterns of change within different sections of the two zones.

Two broad factors are known to have limited breeding waders on Uist in recent decades, predation and land-use change. There is strong direct and circumstantial evidence to support nest predation by Hedgehogs, which are not native in the archipelago, as a limiting influence for breeding waders on Uist (e.g. Jackson *et al.* 2004, Calladine *et al.* 2017). A programme to control Hedgehogs had largely removed them from North Uist by the mid-2000s and was extended to include Benbecula, but Hedgehogs continued to be relatively widespread on Benbecula and while occurrences on North Uist continued, densities have remained low compared to some areas of South Uist. As far as we are aware, the northern zone remained largely free of Hedgehogs to 2022 and therefore changes to wader populations there since 2014 were likely to have been in response to other factors that were not operating so markedly or extensively across the southern zone. Avian predators, especially gulls, are likely to be relevant predators of both wader eggs and young (Calladine *et al.* 2015). It would be useful to ascertain whether levels of predation by gulls, or other species (e.g. Raven *Corvus corax*, Otter *Lutra lutra,* Ferret *Mustela furo* and feral/domestic cats) could have changed differentially between the two zones.

Changing farming systems have been associated with population declines, reduced breeding success and range contraction by breeding waders towards increasingly limited favourable areas and habitats by waders across Scotland and more widely (Bell & Calladine 2017, Franks *et al.* 2017, Buxton & Duncan 2021, Douglas *et al.* 2021, Buxton *et al.* 2022). On Uist, reported changes

in land use from the 1970s to 2009 include a change from cattle towards grazing with sheep, extensive use of synthetic fertilisers largely replacing the use of seaweed and farmyard manure, silaging replacing hay and other crops, deeper ploughing and a reduced number of people cultivating the machair, the latter often leading to more homogenous blocks of arable silage or grass (Pakeman *et al.* 2011, Calladine *et al.* 2014). Changes in management affecting soil chemistry, fertility, moisture and salinity may have affected breeding waders through alterations to food supplies (Calladine *et al.* 2014) while simplification of the configuration of land use and habitat mosaics are likely to lead to a reduction in complementary resources available to waders (Wilson 1978). Furthermore, subtle habitat differences, such as calcium carbonate content of the underlying sand which may influence vegetation type, structure and food availability, could interact with changes in predation pressure and land management to cause spatial variation in the quality of nesting and foraging habitats (Fuller 2018). In addition, changing climate and weather patterns have been demonstrated to affect breeding waders (Kwon *et al.* 2018) and how this might affect Uist waders either directly or through interaction with other factors remains uncertain. Further work is needed to determine whether the divergence in population trajectory since 2014 is a new and worrying trend. If this proves to be the case, it may provide an opportunity to gain better understanding of those factors other than predation by Hedgehogs that control local population size in this extremely important assemblage of breeding waders.

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Plate 97. The audience at the Scottish Birdwatchers' Conference 2023, Stirling. © *David Palmar*

BTO/SOC Scottish Birdwatchers' Conference, Stirling, 18 March 2023

Plate 98. Ruth Briggs. © *David Palmar*

Thanks to the hard work of BTO Scotland and SOC staff and volunteers, over 120 delegates were able to enjoy this year's joint Scottish Birdwatchers' Conference at the wonderful Albert Halls in Stirling. The theme of the conference, 'Ornithological highlights from the heart of Scotland', meant we were treated to a delightfully broad range of talks and speakers, with sessions ably chaired by SOC President Ruth Briggs, Head of BTO Scotland Chris Wernham, Ben Darvill (BTO) and Steve Willis (BTO).

The conference opened with **Rachel Steenson's** talk entitled 'Unravelling the plight of the Dipper'. Iconic and highly specialised river birds, well adapted to spending their whole life around moving water, Dippers' close association with rivers makes them a fantastic bioindicator whose presence can suggest a healthy river system. Historically, Dippers have been negatively affected by processes such as acidification, but despite improvements to air and water quality in the early 1980s, populations have been in steady decline since around 1987. The cause is not clear, but is likely a combination of factors that affect life stages differently. Through nest monitoring at several sites in Scotland and in combination with open-source data, Rachel plans to investigate as part of her PhD at the University of Stirling how the environment might cause differences in breeding success. Over a two-year period, the team observed more than 40 pairs at a series of sites in Midlothian as they attempted to raise young in interesting and often difficult circumstances. From nesting near wastewater treatment plants, to using an old pipe in a culvert, from dealing with predation or spate river flows to building a nest from grass, these birds proved just how adaptable they are. Having

Plate 99. Rachel Steenson. © *David Palmar*

Plate 100. Daniel Johnston. © *David Palmar*

access to both good food resources and nesting spots within a territory can mean the difference between success and failure. This research is ongoing, and Rachel hopes to share the results over the coming months.

Rachel's talk was followed by **Daniel Johnston** from the BTO talking about tracking the movement of gulls along Scotland's east coast. Daniel explained how the Scottish Government currently has goals to produce 50% of its total energy through the use of renewable energy devices by 2030. This will be achieved in part through offshore wind farms, for which large areas of Scotland's seas have been leased. At the same time, Scotland also holds significant populations of Europe's seabirds. Each windfarm must assess the impact it may have on seabird populations, with the varying risks posed to different species and colonies being a key consideration. However, gaining accurate estimates of the impact on populations can be difficult, and the tools used to assess collision or displacement effect are sensitive to information such as flight height and avoidance behaviour. In this talk, Daniel referred to the BTO's work to improve our knowledge of gull behaviour using GPS tracking, and how this is being applied to improve the assessment of the impacts from offshore wind farms. He also displayed some of the novel findings about gull behaviour arising from tracking, including insights into foraging behaviour and seasonal migrations. Discussing how applied research into the interaction between wind farms and gulls can also help better understand the natural history of the species.

Duly refreshed after a tea/coffee break, we now learned how spring 2022 saw BTO Scotland work in partnership with the SOC to host the first Scottish Bird Camp. Six of the 13 young people who participated in the event now took to the conference stage, **Ben Darvill** (BTO's Head of Development and Engagement, Scotland) having first set the scene and summarised the charities' combined efforts to grow and nurture a community of young bird enthusiasts in Scotland. The audience were treated to a heart-warming taster of some of the video and artwork entries received as part of the application process, before it was over to the campers and **Steve Willis** (Development and Engagement Officer, BTO Scotland) to bring the experience to life for conference-goers. Against the backdrop of a slideshow of images from across the weekend (and occasional prompts from Steve!), the young birders did a wonderful job of sharing their highlights: the Bass Rock boat trip (and seeing a

Plate 101. Ben Darvill and Steve Willis with Scottish Bird Camp participants. © *David Palmar*

LOT of Gannets!), catching moths, making bird mobiles, as well as the ringing and nest-finding demos. The talk finished with an opportunity to hear what the young people had gone on to do next and featured artwork and videos from participants who couldn't be there in person. There were tales of ringing Long-eared Owls and Pied Flycatchers; Junior Ranger activities in the Cairngorms; raising hundreds of pounds for Avian Flu research; producing some incredible artwork; taking part in a Goosewatch event, and even a TV appearance! The young participants did a superb job of describing the legacy of the Scottish Bird Camp and left all of us feeling very, very inspired.

Tom Bowser from Argaty Red Kites rounded off the morning session with an illustrated presentation on 'Kites, Beavers and rewilding on Argaty Estate', explaining how the return of these two amazing animals help his family to rewild their farm. Once the commonest bird of prey in the UK, Red Kites were persecuted to extinction in England by the 1870s, and in Scotland by 1917. Since 1989, they have been reintroduced to sites across the UK. From their lowest point, when just ten breeding pairs remained in Wales, there are now over 2,000 pairs in the UK. Red Kite reintroduction may be our island's most successful rewilding story. Another animal on the comeback is the Eurasian Beaver. Hunted to extinction in the 1600s, animals returned to Scottish waters in the early 2000s. These ecosystem engineers bring unbelievable gains to biodiversity. In 2021, Argaty became the first private landowner in Scottish history to legally release Beavers onto unenclosed ponds on their land. Tom detailed the many hurdles they faced, before showing some of the gains that Beavers have brought to the farm, storing water in times of deluge and of drought, and boosting biodiversity.

Plate 102. Tom Bowser. © *David Palmar*

Plate 103. Dave Anderson. © *David Palmar*

After lunch, we resumed with an excellent presentation by Golden Eagle specialist **Dave Anderson** from the Scottish Raptor Study Group. He has been at the forefront of catching, ringing, and tagging techniques for Golden Eagles and shared some results of satellite tagging both young and adult birds. Along the way, Dave dispelled a few myths about Golden Eagle biology (e.g. some Scottish birds are actually very, very big) and how our two eagle species interact. He discussed new research on the Golden Eagle topography model 'GET', and how this helps in our understanding of land use and eagles' needs. We also learned how you handle an adult Golden Eagle - carefully! Modern trail camera technology has revolutionised our understanding of eagle behaviour and we enjoyed some stunning footage of eagles interacting at carcasses, even fighting Foxes and Badgers over a precious winter food resource.

Dave was followed by **Ben Darvill** (BTO Scotland), whose presentation was entitled 'Teaching people about birds... and how we can all help'. Ben stressed how we are all 'learners' - the process never stops. That is part of the appeal, and remembering this helps us to empathise with those earlier in their learning journey. He invited us to think about learning to drive. You need an 'instructor' to *tell* you what to do, but it's critically important that you PRACTISE what you are taught. Anyone who has learned a musical instrument will recognise this too - we must practise complex skills before mastering them. However, BTO's approach to training has also evolved, now using bite-sized chunks, keeping it fun, and making it memorable. Stories and strong visual images help with the latter. In addition to bird song and calls – typically a weakness for many people – BTO courses also teach other transferable skills, such as improving appreciation of 'structure'. They encourage practice, partly through 'homework', and they signpost to useful resources and opportunities to help with ongoing self-development. They also directly support practice via field sessions throughout Scotland. Ben wondered whether the wider birdwatching community could help with this. For example, could SOC groups provide more regular opportunities? Think of the qualities of professional driving instructors, and conversely the *bad* qualities of nervous parents in the passenger seat... Could we work collaboratively to share good practice and then increase the number of opportunities throughout Scotland? He thought it would be fantastic if, wherever someone lived, there were local opportunities for them to get out regularly with supportive folk, nurturing and inspiring the 'next generation' of birdwatchers in Scotland. Do you agree? Ben would warmly welcome discussions with individuals and groups about how we make this vision a reality - please email him at ben.darvill@bto.org

After another tea/coffee pause, **Anthony Wetherhill,** BTO Scotland Research Officer, kicked off our final round of talks with 'Tracking Goosander in Scotland and beyond...', a study conducted in Scotland to investigate the movements of Goosanders during the Salmon smolt run. Using specially reinforced and well-placed mist nets, the research team caught 20 Goosanders at locations on the River Tweed in the Borders and the River Devon in Clackmannanshire, and fitted them with satellite tags to track their movements. The results of the study showed there were differences in the river lengths used by Goosanders between the two river systems. Goosanders tagged on the Tweed tended to stay within the river system, moving only relatively short distances. However, the Goosanders that were tagged on the River Devon

Plate 104. Anthony Wetherhill. © *David Palmar*

tended to travel longer distances, with some individuals moving between river systems and to lochs and estuaries. The data suggest that the River Devon Goosanders may be more opportunistic in their foraging behaviour, using a wider range of habitats to find food during the Salmon smolt run. One of the male Goosanders from the Tweed was found to have migrated all the way to the Norwegian coast. Overall, the study provides valuable information about the behaviour of Goosanders during the Salmon smolt run and will help inform conservation management for fish and birds in Scotland's riverine habitats.

The final presentation of the day was given by Fife wildlife artist **Derek Robertson** whose latest bilingual book *From the Bird's Mouth/Bho Bheul an Eòin* was listed fourth in *Best Bird Book of 2022* awards, organised by the BTO and the journal *British Birds.* Derek pointed out how the Gaelic names of the animals and plants that inhabit that landscape are a part of the tradition of *dualchas* (cultural inheritance), encompassing the intimate bonds that exist between the natural world, the land and its people - connecting, through language, tradition and culture from generation to generation. In recent times, a number of species have appeared in Scotland as our climate changes, or otherwise helped there by human agency, and some don't yet have a Gaelic name. Through a process of research and consultation, with advice from scientists, researchers, and Gaelic writers, *From the Bird's Mouth/ Bho Bheul an Eòin* is naming the new. It gives Gaelic names to these colonisers, and tells their story through poetry, prose, a beautifully illustrated book, and a website. The project's advisors were drawn from a wide variety of agencies and it features specially commissioned poems by Bàrd a' Chomuinn 2021, Rody Gorman, which place the species and their new names in the landscape. Among these coinages are *Beachadair-Eòrpach*, the 'bee-wasp worker' (European Bee-eater), *Crìonag-lasrach*, the 'flaming wee, little creature' (Firecrest), and *Cuilcear-staiseach*, the 'moustached reed-worker' (Bearded Tit). The project will allow Scottish Gaelic speakers and learners to give voice to the new nature around them and maintain Gaelic's rich, cultural link with the changing ecology of the landscape in which it is embedded.

Plate 105. Derek Robertson. © *David Palmar*

Plate 106. The audience at the Scottish Birdwatchers' Conference 2023, Stirling. © *David Palmar*

Throughout the day, the importance of educating people about nature (and birds in particular) was really brought home by all the speakers, from the incredible enthusiasm of the young birders telling us all about the first-ever Scottish Bird Camp, to Tom Bowser's inspiring talk about the rewilding of Argaty Estate. We learned a lot about how individuals of a species behave, from Dippers and all the strange places where they choose to nest, to the movements of Isle of May gulls and our local Goosanders on the River Allan, via some spectacular Golden Eagle footage from the Trossachs! And finally, taking that knowledge and ensuring that some species still new to Scotland receive fitting names not only in English and Latin, but also in Gaelic.

Owing mainly to the hard work of SOC Central Branch chair Rick Goater, the annual raffle raised just over £400 for the branch, and the SOC was delighted to gain six new members. Some of the conference delegates were also able to get out and enjoy the birdlife around the local area the following day, with outings to Kinneil, Black

Plate 107. Wendy Hicks handing out raffle prizes. © *David Palmar*

Devon wetlands, Cambusmore gravel pits and the River Teith organised and led by branch members. Thanks to all involved for a great and inspiring weekend.

Special thanks to SOC Central Branch member Eilidh McNab and the conference presenters for their help in compiling this account

NEWS AND NOTICES

New members

Argyll: Mrs J. Goudie & Mr D. Millward, **Ayrshire:** Ms N. Allen, Miss A. Ledwith, Mrs H. Smith, **Borders:** Mr D. Gray, Mr N. Hinchliff, Mrs C. Maclay, Mr M. Stenhouse, Mr & Mrs G. Williams, **Central Scotland:** Ms L. Briggs, Miss V. Curley, Dr K. Ferguson & family, Mr & Mrs C. Ferries, Mr C. Sinclair, Mr M. Worsley, **Clyde:** Miss F. Blackbourn, Mr R. Bolton, Ms W. English, Mr M. Frosdick, Mr & Mrs J. Grimmond, Mr I. Kennedy, Mr J. Leestmans, Mr C. Tinto, Mr L. Wake, Miss C. Wilson, **Dumfries:** Mrs C. Clegg, Mrs C. Elliot, Mr S. Jones, Mrs M. Kerr, Mr J. McWatt, Mr A. Sutton, **England, Wales & NI:** Mr D. Cemmick, Mr R. Cumming-Bruce, Mr M. Diaz-Bloor, Mr T. Farooqi, Miss G. Fee, Mr J. Rule, Ms C. Tremlett, Dr J. Woodhouse, **Fife:** Dr E. Benson & Dr K. Harding, Mr D. Bruce, Mr R. Bryan, Mr A. Cage, Mrs A. Christie, Miss I. Cuiral Zueco, Mr W. Dunlop, Mr D. Rumble, Mr F. Todd, **Highland:** Mr A. Beams, Mr T. Claes, Mr M. Cole, Mr & Mrs J.P. Curran, Mr M. Durance & Ms S. Dunbar, Mr J. Newson, Mr D. Patterson, **Lothian:** Mr S.R. Arthurs, Mr & Mrs A. Bragg, Mr I. Brown, Ms S. Clough, Mr & Mrs G. Cocker, Mr T. Conroy, Mrs B. Cousland, Miss C. Dalziel, Mrs M. Fischer, Mr G. Forgan, Mr C. Fraser, Mr D. Gilfillan, Mr K. Gilmour, Miss K. Healy, Miss E. Hollington, Ms D. Jackson, Ms A. Lewis, Mr Z. Lu, Mr K. Mayfield and family, Miss E. Mayhew, Miss H. McFarlane, Mr J. McNicol, Mr J. Neil, Mr & Mrs D. Onions, Mr & Mrs H. Pennell, Mr G. Pinfield, Mr T. Rans, Mr & Mrs D. Reilly, Ms S. Rutherford, Dr H. Sang & family, Mr M. Scott, Miss D. Senatore, Dr H. Taylor, Miss A. Telford, Mr C. Theobald, Mrs N. Todman, Ms Y. Vance, Mr J. Whitelegg & Ms T. Deare, **Moray:** Mrs S. Anderson, Mr J. Ross, **North-East Scotland:** Dr R. Conder, Mr J. Kedra, Miss S. McWilliam, Mr D. Mitchell, Mr J. Scott, Ms C. Stapel, Mr K. Sweetmore, **Stewartry:** Mr & Mrs T. Riden, **Tayside:** Mr D. Albiston, Mr D. Allan, Dr M. Bolton, Mr S. Gilmour, Mr & Mrs C. Macintosh, Mrs A. Mcfarlane, Prof W. Saunders, **USA:** Dr N. O'Connor, Miss S. Wiley, **West Galloway:** Mrs J. Grover

Waterston House updates

Opening hours: Wednesday to Sunday 10:00–17:00 hrs (summer opening hours, until 24 September). Please check the SOC website for any updates to opening hours and facilities available when planning your visit: www.the-soc.org.uk/about-us/getting-here-opening-hours Admin staff can be reached Monday to Friday 09:00–17:00 hrs and weekend staff 10:00–17:00 hrs on 01875 871330.

Art exhibitions

John Busby retrospective 7 June–30 July 2023. Taking place in the gallery corridor is a retrospective of around 20 works on paper by the late John Busby (1928–2015). Artist, author, and illustrator, John was a founding member of the SWLA and the Artists for Nature Foundation and has been a source of inspiration and encouragement for many wildlife artists working today. In his long career, he travelled extensively and always with a sketchbook in hand to record new bird species and behaviour. The artworks in the exhibition represent the breadth of those travels, with birds from the Indian Ocean, the South Atlantic and the USA, as well as from Europe and the fabulous variety on his doorstep here in Scotland. In the foreword to a previous exhibition, he wrote: 'I try to follow this love of the live bird – its actions, its harmony and discomfort with the elements – the complete bird and not just a decorative device, and to explore the essence of each species I know. I also try to show the artist's reaction to the pleasure of events seen in the wild and the strong element of the unexpected in nature. There is a lifetime of watching in the drawings, which I think anyone with first-hand experience of birds will detect.

Plate 108. Red-footed Boobies, Aldabra. © *John Busby*

Plate 109. Spotted and Caught. © *Chris Wallbank*

Chris Wallbank SWLA 'Mostly Air' 7 June–30 July 2023. This concurrent exhibition presents new work by Chris Wallbank in the main gallery. Chris is an artist specialising in painting, drawing and printmaking and is a member of SWLA (Society of Wildlife Artists). He is most at home working in response to the changing elements and rhythms of nature. He believes in the role visual art can play in presenting themes of ecology in a new light, leading him to collaborate with a wide range of conservation projects, from the long-term monitoring of breeding Guillemot colonies on Skomer Island to the preservation of urban Black Kites in New Delhi. The title of the exhibition, taken from Ursula K. Le Guin's poem, alludes to its overarching theme of birds being feathered, light, and 'mostly air'. The drawings, paintings and animations focus on the avifauna of Scotland, especially in East Lothian where Chris has lived since 2020. Everything on show, from oversized scroll drawings to delicate watercolours, is created from life, whilst rejoicing in watching birds and the sense of wilderness such encounters affirm. Fleeting glimpses, ephemeral moments, fading landscapes and the lightness of brush on paper, the work is mostly air.

Simon Griffiths, Emily Ingrey-Counter and Nye Hughes 'Between Earth and Sky' 2 August–24 September 2023. This exhibition presents a mix of drawings, paintings and ceramic sculptures by three specialist wildlife artists, all SWLA members. Emily and Nye are both based in Edinburgh and take much inspiration from their local environment in the Lothians. Emily creates fresh and energetic drawings of the natural world through direct and immediate mark making. Most of her work is created outdoors capturing fleeting moments and visceral experiences of nature through her use of mixed media (mostly pastels, ink, charcoal and paint). Nye is an artist and

Plate 110. Two Gannets. © *Simon Griffiths*

Plate 111. Kittiwakes, St Abbs Head. © *Nye Hughes*

Plate 112. Nesting on the rocks. © *Emily Ingrey-Counter*

designer who first came to Scotland to study Animal Ecology and never left. The main focus of his artwork is the remarkable ecology of the Scottish coast and islands and the wildlife and plants that inhabit them. In this exhibition, Nye presents watercolour paintings created on locations along the East Lothian coast, the Bass Rock and the Isle of May, as well as a series of works inspired by a recent assignment in Chile and featuring penguin colonies and forests of Monkey Puzzle trees. Simon, a sculptor based in County Durham, captures in ceramics the wildlife that surrounds him in the north Pennines.

Art Online: The SOC Online Art Shop continues to reflect the variety of art that is showcased in the gallery by offering a selection of work by current and past exhibitors. So, if you have missed recent exhibitions, there is a good chance that you can still experience some of the artwork that was on show by heading online: www.the-soc.org.uk/online-shop

SBRC seeking a new committee member

The Scottish Birds Records Committee (SBRC) is seeking a new member to replace Mark Warren, who retires later this year. To maintain geographical representation across the country, SBRC would prefer a candidate from the Highland areas of Scotland. Any potential candidates should send their name to the Secretary (Chris.McInerny@glasgow.ac.uk). If more than one name is put forward, a ballot will be instigated, with Local Recorders having one vote each.

Chris McInerny, on behalf of SBRC

Branch updates

New contacts

Borders, Branch Joint Chairs: Elise and Malcolm Ross, Tel: 01896 755523, eliseandmalcolm@btinternet.com. Council thanks outgoing Chair, Gavin Paterson, for the energy and enthusiasm that he has invested in taking the branch forward during his brief tenure.

Clyde, Branch Secretary: Rebecca Dickson, Email: clydesecretary@the-soc.org.uk. Tel: 07907 833114, SOC Council thanks outgoing Secretary, Ian Fulton, for his dedication to the role over the past decade.

Moray, Branch Secretary: Chris Thomas, Tel: 07802 570485, Email: moraysecretary@the-soc.org.uk. Chris takes up the reins from Alison Ritchie, who stepped down from the role in March. Council thanks Alison for her time and commitment given to heading up the local group, Moray Bird Club, over the past five years.

SOC Annual Conference, 24–26 November 2023, Atholl Palace Hotel (and online)

We hope members and non-members alike will join us in person at Pitlochry or virtually for what is set to be an exciting programme of talks based around the popular theme of bird sounds. Full programme and booking information will be available on the SOC website (and members notified by email) in due course.

Latest local bird reports

Arran Bird Report 2022

The annual Arran Bird Report includes information on all species seen on Arran, a month-by-month summary of what was around in 2022, information on ringed birds, and reports on some of the island's bird projects. The report is available from various outlets on Arran. It is also available directly from the distribution organisers for the Arran Natural History Society, priced at £9.99 plus £1.70 p&p. Email: arrannaturalhistorysociety@gmail.com.

Ayrshire Bird Report 2019 (Digital)

Ayrshire Birding's work to get back on track with their bird reports continues apace. The 2019 Bird Report is now available. In digital format only, it is free to

download from the Ayrshire Birding website: www.ayrshire-birding.org.uk. This latest report includes an annual summary of Tom Byars' Ayrshire Lesser Whitethroat study. It also features a full systematic list and a wide range of photographs taken within Ayrshire during 2019.

Dumfries and Galloway (No.32) 2021

The 2021 report is priced at £8.00 plus £2.00 p&p and copies can be purchased from Peter Swan, 13, Robb Place, Castle Douglas DG7 1LW, Email: pandmswan@btinternet.com, Tel: 01556 502 144. Please make cheques payable to 'SOC Dumfries and Galloway Branches'. Copies (priced at £8.00) are also available to collect, by prior arrangement, from Peter or from Joan Howie (New Galloway, Tel: 01644 420 280), Brian Smith (Dalbeattie, Tel: 01556 620617) or Drew Davidson (Lockerbie, Tel: 01576 202591/07906 912558.

Highland Bird Report 2021

The 2021 report is now available. The digital report is free to view on the Highland Birds website (www.highlandbirds.scot). Printed copies are available for £10.00 for collection/hand delivery, or £12.50 including p&p, by emailing carol.miller@outlook.com.

The report includes the study of spring seaducks at Portmahomack in 2021, and items on 46 years of ringing in a north coast garden and The Fladaigh. Alongside these is the annual report on the first and last dates of common migrants, the review of the ornithological year, systematic list, and ringing data amongst other features.

North-East Scotland Bird Report 2021

Copies are available at a cost of £10.00 (including p&p) and details are on the North-East Scotland Bird Report website: www.nescotlandbirdreport.org.uk The report includes the ornithological year, systematic list, and Grampian Ringing Group summary, as well as other items including the Birds of the Ythan Estuary 2011–2015 Part 2 - Waders. There are reports on the Mammals, Amphibians and Reptiles in North-East Scotland in 2021, and the first in what is hoped will be an annual summary of the butterflies in the region.

The shop at SOC headquarters in Aberlady takes delivery of a small supply of most regional bird reports for over-the-counter purchase. Please call ahead to check availability.

Letters to the editors

In addition to the article 'Least Bittern at Scousburgh, Shetland, 7 October 2022 - first British record', *Scottish Birds* 43:1, I'd like to highlight that myself and my partner, Charlie Birtles, were present and actively involved in the finding and identification of the Least Bittern.

Charlie was first to find the bird at Scousburgh Sands whilst out walking, photographing it on her phone at 15:15 hrs. She recognised the bird as bittern-like but was unable to identify it herself. After attempting to contact me, she made the decision to leave the bird and travel to collect me from Bigton, a short distance up the coast.

On our return, Bert Mitchell and Steve Keightley had arrived on site in their car which they'd parked in the car park - no other birders were present. Steve remained in the car whilst I stood next to it watching the bird with Bert and Charlie. I voiced it was a Least Bittern, all parties agreed and news was shared. Contrary to what was described in the published article, which appears to have some ambiguities, we were active participants not by-standers.

Paul Baker, Northwich, Cheshire.
Email: paulroybaker@icloud.com

Further to the tribute to the late Muriel Draper, *Scottish Birds* 43:1, I would like add that Muriel was not just a Committee member of what was then called the Glasgow Branch of the SOC but was actually its very efficient and long-standing Secretary, from 1968 to 1978.

One year, Muriel arrived at Loch Garten Osprey Camp in her days-old brand new little car - her pride and joy. An eagle-eyed young volunteer warden walked past her car, then retraced his steps and pointed out that she had a different number plate by one digit on the front from that on the rear! An extraordinary start to an amusing and enjoyable week with Muriel as a volunteer.

Joan Howie, Secretary, SOC Stewartry.
Email: joanospreys1@btinternet.com

Plate 113. Gannets. © *Naomi Hodgson*

Bird Camp - and what came next...

My name is Naomi, and I'm 12 years old and have been birdwatching for a few years. My interest in birds began during lockdown with one of my best friends, Evie. We went on walks together, and spent a lot of time excitedly running up and down Blackford Hill in Edinburgh, looking for woodpeckers, Treecreepers and Buzzards. Birdwatching is my favourite way to spend my time.

Recently, my friends made me aware of how many birds were dying from avian flu - before then I didn't know much. It reminded me of the trip to see the Gannets at Bass Rock that I did at the SOC/BTO Scotland Scottish Bird Camp last summer. The sight of these beautiful creatures filling the skies, like a cloud, was breath-taking. But knowing how badly this population has been hit since then is heart-breaking.

Realising how serious bird flu is, my friends (Evie and Maeve) and I decided to learn more. At school we have been trying to increase awareness and have also started a fundraising stall. We chose to make cards and painted wooden pieces because my friends and I love art, and I especially love drawing birds and animals. My other friends (Julie and Cadi) have also recently started birdwatching. They too have helped by baking cookies and cupcakes, as well as painting the wooden art pieces.

At the time of writing, our stall had been going for six weeks. We raised about £80 on our first day, and we have now made over £450. We plan to donate our funds to the BTO to support their avian influenza appeal.

I want to help because I love birds - when I'm birdwatching, I lose track of time, it's just me and the bird and nothing to worry about. To live in a world where even a Robin is a scarce sighting would be very sad. Birds are fascinating creatures. One of my favourite birds is the White-tailed Eagle. I know people have been working so hard in the UK to bring it back from extinction. It would be devastating if all that progress was destroyed because of this virus. So, I want to help in any way I can, so that no bird will have to face extinction.

Naomi Hodgson,
2022 Scottish Bird Camp participant

Plate 114. At the end of their fundraising drive, the young people had raised an incredible £474.30 for BTO, which was accepted by staff members Ben Darvill and Steve Willis, on behalf of the Trust, at the 2023 Spring Conference. © *David Palmar*

Plate 115. The fundraising team (from left to right) Maeve, Julie, Naomi, Evie and Cadi. Image © *Anoushka Matthew*

Plate 116. The SRMS came to fruition on 24 June 2022 with the signing of an Agreement by the original seven partners. (L–R) David Stroud (JNCC), Mark Holling (SOC), Malcolm Ogilvie (RBBP), Prof Colin Galbraith (SNH), Patrick Stirling-Aird (SRSG), Stuart Housden (RSPB) and Nick Carter (BTO). © *Photographer unknown*

20 Years of the Scottish Raptor Monitoring Scheme

In 2022, the Scottish Raptor Monitoring Scheme (SRMS) celebrated its 20th anniversary. This article reflects on the origins and development of the Scheme as well as its main achievements of the last two decades. Scotland's breeding raptors include several iconic and charismatic species of conservation importance. These are often involved in high profile 'conservation conflicts' with some land uses and developments. Having the best information available to inform conservation issues around raptors was a key reason for the formation of the SRMS.

Origins

The origins of the SRMS can be traced back to June 1995, when a Parliamentary question was asked about the impact of growing raptor populations on game bird management and racing pigeons. The UK Government response to that question was to form the *UK Raptor Working Group* to examine the issue and make recommendations for the future. That Group comprised representatives of Government (both UK and what was then the Scottish Executive), environmental and conservation groups, land and game management bodies and racing pigeon unions.[1]

In 2000, following 25 meetings and taking into consideration submissions from a range of individuals and organisations, it produced the Report of the UK Raptor Working Group (https://data.jncc.gov.uk/data/7934aae3-e6ec-46fa-8b5e-20fc271967d4/2000-Raptor-Working-Group-Report-SCAN-WEB.pdf). This report included 25

[1] Members of UK Raptor Working Group: RSPB, SRSG, BASC, GWCT (GCT at the time), SLF (now SLE), ITE (now CEH), Scot Exec Rural Affairs Dept, Dept of Environment, Transport & Regions, JNCC, and The Confederation of Long Distance Racing Pigeon Unions of Great Britain and Northern Ireland (also representing the Royal Pigeon Racing Association).

recommendations to improve understanding of and provide resolutions to the conflicts between raptor conservation and the interests of racing pigeon and game bird interests. Four recommendations (1, 2, 9 & 25), were designed to improve monitoring and reporting on our raptor populations, with recommendation 1 the key, overarching one.

'We recommend that current programmes of monitoring of birds of prey undertaken by JNCC and the country agencies, RSPB, the Rare Breeding Birds Panel, the Raptor Study Groups and others are maintained at least at existing levels of activity to provide the necessary feedback on the changing status of populations. The productive partnerships between the statutory agencies and non-governmental organisations in monitoring birds of prey should continue to be developed.'

At this time the key source of publicly available information on the annual monitoring of breeding raptors in Scotland was the annual 'Raptor Round Up' produced by the Scottish Raptor Study Group (SRSG) and published by the Scottish Ornithologists' Club (SOC). These summary data were very useful, and provided a foundation for future raptor monitoring efforts to build on.

Following publication of the report, key organisations continued to work behind the scenes to develop a more formal framework for raptor monitoring in Scotland. In June 2002 representatives of SRSG, SOC, Joint Nature Conservancy Council (JNCC), Scottish Natural Heritage (SNH, now NatureScot), Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and the Rare Breeding Birds Panel (RBBP), met at the Atholl Palace Hotel in Pitlochry to sign off the agreement to set up the SRMS.

The newly-formed SRMS would receive significant funding from SNH, with contributions from RSPB and BTO. The work plan of the SRMS would be overseen by the Scottish Raptor Monitoring Group (a steering group comprising representatives of all the partners). It would employ a part-time Raptor Monitoring Officer (RMO) to liaise with the partners and to collate and analyse the annual monitoring data for all the regularly breeding raptors and owls in Scotland and the 'honorary raptor', the Raven. It would utilise the existing annual monitoring by the SRSG members, as well as data from other sources, such as RSPB fieldwork. Having the highly experienced and respected Brian Etheridge appointed to the RMO post was pivotal in ensuring all partners bought into the SRMS from the outset.

Plate 117. SRMS 20th anniversary, Pitlochry, November 2022 (current and former SRMG reps L–R) Helen Riley (former Secretariat), Duncan Orr-Ewing (RSPB), Wendy Mattingley (SRSG), Mark Wilson (BTO Scotland), David Stroud (formerly JNCC), Mike Thornton (SOC), Alan Heavisides (SRSG), Andrew Stevenson (NatureScot), Amy Challis (SRMS), Mark Eaton (RBBP), Logan Steele (SRSG), Juli Titherington (SF), Kenny Kortland (FLS), Chris Wernham (BTO Scotland) and Patrick Stirling-Aird (SRSG). © *Steve Willis*

The SRMS has had to demonstrate that it can be a safe custodian of sensitive breeding raptor data (much of it relating to nest locations of Wildlife & Countryside Act Schedule 1 species) whose ownership remained with the data providers. This has not been without its challenges, but confidence in the SRMS has grown significantly as it, and the partnership, developed over the years. The objective stance, of BTO as the data manager, has also been important in gaining the SRMS data acceptance in the wider 'political world' of raptors in Scotland.

Development

The make-up of the partnership has changed since the Scheme's inception, with Forestry Commission Scotland (now two bodies: Scottish Forestry [SF] and Forestry and Land Scotland [FLS]) joining a decade ago, and JNCC recently stepping back as it focusses on UK-wide partnerships. A major review in 2013 saw a new case put forward to further develop the SRMS and resulted in a major increase in funding from SNH as the primary funder. This allowed the Scottish Raptor Monitoring Coordinator become a full-time post and enabled several modernising developments. Over its lifetime, the SRMS has benefitted greatly from having the continuity of two long serving coordinators, Brian who retired from the post in 2013, and the current coordinator, Amy Challis, who started in 2014.

At the present time, the work of the SRMS continues to be overseen by the SRMG. Funding support has come from BTO, RSPB, FLS and SOC in addition to NatureScot. There is significant in-kind time from all the partners with the cost of commercially capturing the data that comes to the SRMS annually estimated at more than £1.75 M.

Achievements

Raising the profile of the Scheme

Over the last 20 years, the SRMG has been working to raise the profile of the SRMS both within Scotland and further afield. In a UK context, the Scheme was awarded the Institute of Ecology and Environmental Management Best Practice Award in 2009. More recently, there have been discussions about the potential formation of a UK-wide scheme; with the SRMS clearly being seen as the role model to which other UK countries aspire. From 2010 to 2015, the SRMS was part of the EU-funded EURAPMON project, whose aim was to develop models for raptor monitoring across Europe. The final conference proceedings of that project were published as a special edition of Bird Study in 2018 https://www.tandfonline.com/toc/tbis20/65/ sup1 and include a paper on the development of the SRMS. On a wider international scale, the SRMS has been used as a demonstration of partnership working in relation to the Conservation of Migratory Species of Birds of Prey in Africa and Eurasia (Raptors MOU) meetings.

Initially, Scheme information was hosted on the SRSG website, but a dedicated SRMS website was developed in 2015 (https://raptormonitoring.org/). As well as improving the Scheme's online presence, this acts as a one stop shop for all information about the SRMS. Additionally, the SRMS produces the *Scottish Raptor* e-newsletter (https://raptormonitoring.org/scottish-raptor) several times a year to keep readers informed of SRMS developments and provide them with a range of other raptor-themed articles.

Trends in breeding numbers and productivity

One of the key objectives of the SRMS is 'to provide robust information on Scottish raptor populations to determine trends in number, range, survival and productivity, and to understand the causes of population change'. Survival is harder to monitor as it requires more intensive tagging, tracking and re-sighting of both young and adult birds than has been achieved for many raptor populations. Up to now, the SRMS has concentrated on trends in breeding numbers and productivity. Published in 2015, the *SNH Commissioned Report 541 Raptors in Scotland - Developing Trends and Indicators* (https://www.nature.scot/doc/naturescot-commissioned-report-542-raptors-scotland-methodology-developing-trends-and-indicators) assessed what parameters (e.g. occupancy, productivity) could be assessed using SRMS and other data (e.g. BTO/JNCC/RSPB Breeding Bird Survey) and included some provisional trends. In November 2022, to coincide with its 20th anniversary, the Scheme was delighted to release the first set of national (Scottish) and regional (SRMS Region &

Natural Heritage Zones[2]) trends in breeding numbers and productivity. This will hopefully enable NGOs, statutory agencies and ultimately Scottish Government to make better informed decisions about how to protect these birds. Readers can find more about this work on the SRMS website (https://raptormonitoring.org/trends) and also explore these trends interactively on the following web page: https://raptormonitoring.org/trends/explore-trends-interactively.

Annual reports

A key output from the Scheme has been its annual reports which commenced in 2003 (https://raptormonitoring.org/annual-report). These reports have become more refined over the years and now include additional articles on SRMS-related topics in addition to the annual species accounts, which are still the focus of the report. Since 2017, the hard copy print run has been supported by funding from the SOC's *Birds of Scotland* Fund.

Raptor monitoring field guide

Another important achievement was the publication of a guide on best practice for raptor monitoring: *Raptors: A Field Guide for Surveys and Monitoring* (3rd edition, 2013). This was drawn together by an editorial team that was led by the late Jon Hardey, distilling the knowledge and experience of SRSG members and other raptor monitoring experts. It became a best seller with three editions and the 'go-to' guide for raptor monitoring - not just in Scotland but throughout the UK and in many other European countries. Although out of print, a PDF version is available (https://raptormonitoring.org/need-advice-on-monitoring). In addition the SRMS has facilitated with SRSG, training in raptor monitoring between partner organisations especially with FLS.

Improvements in data curation and analysis

Data curation and analyses have also improved over the years. As noted earlier, the expertise of BTO in this area has been vitally important. In 2009, a bespoke data submission spreadsheet was introduced, to improve the quality and consistency of information submitted to the Scheme. The 2013 review mentioned above made several recommendations aimed at improving data management and access. Key developments in this area over the past 10 years include agreement for the BTO to hold a centralised database on behalf of the SRMS, and developments of an online data submission system. The centralised database held by the BTO means that data are more secure, and has enabled more systematic checking and analysis. The online data submission system (SRMS Online) has been up and running since 2019, and already many contributors have adopted this preferred route for submitting their records. Both developments make it easier to avoid and correct mistakes in SRMS data and enable the Scheme to report on and share these data more efficiently.

Mobilisation of data

Another recent development is an online portal for the partner organisations so they can have direct access to SRMS data. Data are also shared with the NBN Atlas Scotland (https://registry.nbnatlas.org/public/show/dp245) at agreed data resolutions to protect sensitive species nest locations. Importantly, data can also be accessed by the National Wildlife Crime Unit to provide surveillance and intelligence to aid police initiatives to tackle wildlife crime. All of the above is made possible through a Data Sharing and Use Policy (https://raptormonitoring.org/srms-data/data-sharing-use-policy) to which all Scheme partners and data contributors sign up. It has taken significant time and effort to formulate and agree on this policy, and it is kept under review to ensure it continues to meet the partners' requirements.

Volume of data

The volume of data submitted annually to the SRMS in recent years is more than 6,000 records, an impressive increase on the 3,000–3,500 records per year submitted to the Scheme at its start. Significant proportions of the populations of a number of the rarer raptors are monitored annually, and the Scheme is now the route by which monitoring records of Scotland's two reintroduced raptors (Red Kite and White-tailed Eagle) are collated and reported on, both species populations now having outgrown previous

[2] Natural Heritage Zones are biogeographical regions of Scotland devised by SNH.

Plate 118. Hen Harrier, South Uist, Outer Hebrides, June 2022. © *Andrew Stevenson*

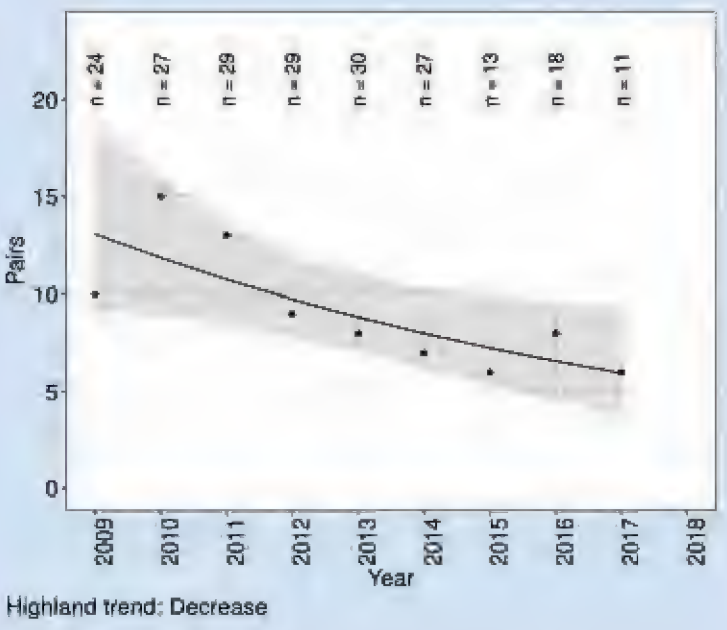

Figure 1. Trends in pairs of Hen Harrier in Highland using SRMS data.

bespoke monitoring. A new initiative called Raptor Patch (https://raptormonitoring.org/getting-involved/raptor-patch) is being trialled by SRMS, with the dual aims of improving coverage of four widespread species (Buzzard, Kestrel, Sparrowhawk and Raven) and engaging new audiences in raptor monitoring.

Data uses

SRMS data are used for a variety of different purposes, both by Scheme partners as well as by a range of other users. As a statutory nature conservation body, NatureScot uses the data for population monitoring and national and international reporting that is required by Government. The data are also used for reporting on the status of nature conservation sites designated for raptors (Sites of Special Scientific Interest and Special Protection Areas) and in planning development and land use casework. The data also play an important role in briefing the Scottish Government about raptor populations and answering Parliamentary questions. These often pertain to contentious topics where it is critical that answers are informed by objective data. FLS use the data to inform forestry management and conservation work on their land, whilst SF use it to inform assessment of forestry grant proposals and guidance for good practice. RSPB also use SRMS data to inform casework for development proposals, and occasionally for research seeking to understand the drivers of population decline (e.g. Merlin). The bulk of raptor data from Scotland that goes to the RBBP comes via the SRMS.

Data requests can be made by non-partner organisations for access to data for specific projects. Over the years, several academic researchers have requested and been given permission to use SRMS data for projects on raptor ecology and conservation.

SRMS data also informs the planning and preparation of periodic national surveys for species of conservation concern. The next of these surveys will be for Hen Harrier in 2023. During the periods between these national surveys, the annual monitoring delivered by the Scheme provides some insight into the population of these rarer species. The data also inform periodic reports on the conservation status of birds in the UK, such as the Birds of Conservation Concern publications which most of the SRMS partners contribute to. Promotion of monitoring and reporting of Scottish raptors fits well with SOC's role.

The future

At time of writing, the Scheme is undergoing an independent evaluation. Such a review is good practice for any such scheme to ensure lessons are learnt and evolution continues to meet future needs. The review is welcomed by the SRMG, who are keen to ensure that the SRMS continues to thrive and develop to best serve raptor conservation evidence needs in Scotland over the next 20 years and beyond.

Scottish Raptor Monitoring Scheme c/o BTO Scotland, Beta Centre (Unit 15), Stirling University Innovation Park, Stirling FK9 4NF.

OBITUARIES

James (Jim) John Dunbar (1930–2022)

Few ornithologists are likely ever to have a memorial to their endeavours built by hard-core offenders and erected while they are still alive. In 2018, the eponymous Dunbar Hide opened at the RSPB's magnificent Loch of Strathbeg reserve in North-East Scotland, having been constructed by inmates of the nearby prison at Peterhead. The hide contains a display panel about the man who was largely responsible for the creation of the reserve.

Back in the early 1970s, there was a plan to build an onshore gas processing terminal for the new Forties oilfield on the war-time airfield alongside the Loch of Strathbeg. This would have involved bringing pipelines ashore through the fragile dune system and over the bed of the shallow loch. The proposal caused uproar and the clash with a newly formed environmental coalition was conveniently resolved when the Ministry of Defence pushed aside both parties and took the land to build an enormous radio station. The gas plant was subsequently built further along the coast at St Fergus. The fuss about the loch had greatly raised awareness of the importance of the site and, in 1973, the RSPB appointed Jim Dunbar there as only their second Warden in Scotland. The Society originally leased and had management agreements over part of the area around the loch where there was a great deal of unregulated wildfowl shooting. Operating out of a caravan without a telephone, Jim's initial job was to try and limit the carnage, often in tense confrontations with armed poachers out in the marshes during the hours of darkness - tough operations that made him something of a local legend. In 1975, he was made Reserve Manager, a position he held until his retirement in 1994. During this time, the RSPB purchased large sections of the loch and the surrounding area and Jim restored much of the farmland to managed wetland. He built a boardwalk through part of the fen and erected the first visitor centre. This comprised a large shed relocated from Vane Farm on the back of a fish wagon and was installed overlooking the loch with the help of volunteers in dreich conditions. Pete Ellis recalls sitting on Jim's shoulders to drill holes in the

Plate 119. Jim opening the Dunbar Hide, Loch of Strathbeg, North-East Scotland, 21 March 2018. © *M. Sullivan*

original Bay Hide to help tie it down - funds were tight, and there was no ladder. In the early days, Jim had to straighten nails for reuse around the reserve. A parcel of land at Starnafin farm was acquired in 1987 and, under Jim's supervision, the reserve's new Visitor Centre opened there soon after.

Jim was born in Old Deer, Aberdeenshire, on 3 January 1930. His father was a farm worker and the family moved around between different farms. In the 1950s, Jim joined the army and wanted to go to the Korean War but was posted to Gibraltar instead. There, he took the opportunity to observe raptor migration and explore parts of Spain and north-west Africa. On his return to civilian life, he re-joined his family, then at Brechin, where he wed his first wife for what turned out to be a short, but turbulent, marriage. He worked as a gamekeeper on the Southesk Estate and gained skills that were later put to good use at Strathbeg. After leaving the estate, he was a driver at HMS Condor at Arbroath. His interest in birds developed in the mid-1960s when he joined the Dundee branch of the SOC where he served on the branch committee. He became interested in ringing, and befriended some keen young birders including Norman Atkinson, Mike Nicol and Ron Summers. This led in due course to Jim co-founding the Tay Ringing Group, the first such group in Scotland. From 1971 to 1973, before his relocation to Strathbeg, he was the first warden at St Cyrus, Aberdeenshire (now a National Nature Reserve), where he made a particular study of Little Terns.

Jim was an excellent birder. He discovered a number of rarities including a dowitcher *Limnodromus sp.* at the South Esk in 1971, and a Pied-billed Grebe at Strathbeg in 1977. Lawrence Brain recalls sitting in a boat at Strathbeg with him in 1975 when he identified a Red-footed Falcon as it flew in off the sea. His ringing was scaled back after he started at Strathbeg, but he maintained his licence until 2008. He was an excellent, all-round naturalist, conducting the first botanical survey of the reserve with Stuart Cutts and taking part in other investigations of terrestrial and aquatic invertebrates. His interests in the education potential of the reserve continued after his retirement until it was wound down by the RSPB. He married his second wife Anna in 1974. They shared common interests in gardening and archaeology and she provided great support to him through to her death in 2010. Jim was 'old school', straight-forward and extremely practical. He tended to be quiet, but not afraid to speak his mind and was much respected by his RSPB superiors. He will be remembered by his many friends, some of whom contributed to this memoir, as a warm, generous, principled man, devoted to wildlife conservation.

Alan Knox

Thomas Ritchie Lawson (1935–2022)

Plate 120. Julia & Tom Lawson, Norway, 2018. *© Julia Lawson*

Tom Lawson, who died on 27 July 2022, was by profession a consultant radiologist at York Hospital. For over half a century Tom was also part of a very vibrant birdwatching scene in York, where he was a good friend and colleague of Professor Sir John Lawton, one time chair of the RSPB. For most Scottish birders, however, Tom will be best remembered for his longstanding presence at SOC conferences and other bird-related gatherings such as those organised by RSPB and the SRSG. There, he and his wife Julia would set up their ever-popular second-hand bookstall *Second Nature*, happily chatting not just about antiquarian bird books but also about

their trips to far-flung places. For Tom was much travelled and well connected, being pals with that celebrated ornithological tribe that included among others Richard Porter and Tony Marr. In his youth, he undertook early pioneering trips to Asia and the Middle East, and this love of travel continued throughout his life. He visited every continent, and most deserts and archipelagos. Tom had an encyclopaedic and perhaps unsurpassed knowledge of wildlife books that went far beyond ornithology, but birds were his real speciality. Tom adored birds; all birds!

As a youngster, Tom had an uncle who worked at the Collins printing presses in Glasgow, and he would send him the latest in the New Naturalist series hot off the press. This may well be what set Tom off as a bird book collector - and, in retirement from medicine, as a seller. He sought and maintained second-hand books of the highest quality, selling them on at very reasonable prices. He seemed to receive genuine pleasure in being able to satisfy a long-cherished book requirement, and in the book going to a good home and an owner who would look after it as he had done.

Tom enjoyed talks on birds at various conferences and other fora, and he spoke engagingly on various subjects to RSPB and other groups around the UK. He was a good and engaging storyteller, but always interested in someone else's story, too. Very likeable, sociable, and knowledgeable, he was great company to be with. Our sympathies are with Julia, their children Sarah, Alex and Christopher, and grandchildren Tabitha, Cameron and Charlotte.

Peter Holt, Chris Rollie & Ken Shaw

Thomas Patrick Daniels (1941–2023)

'Tommy' Daniels and I were lifelong friends. We had not just the interest in birds but also in moths and butterflies, mammals, reptiles, flowers, trees, and fungi and a loving of art in all its forms. Tommy had sculpted a realistic figure of a charging bull while still at school, and was clearly destined for the Glasgow School of Art where he attained his Diploma of Art degree. It led to a teaching post in the city, and continued our joint interests in the natural world. This included a propensity for island hopping and bird-ringing. While knowing Tommy improved my drawing of birds greatly, I was able to reciprocate with the basics of taxidermy and to let no freshly dead bird go to waste. We also, as bird ringers, regularly checked dead birds, often roadkill, for rings. A dubious advantage on motorways, however, when a three-mile drive (to find turning places) saw us misidentify a roadside gardening glove as a dead Great Grey Shrike. Much amusement for many years thereafter! My interest in birds, particularly seabirds, was shared by Tommy. The McCormaig Islands at the mouth of Loch Sween in Argyll had a good colony of Shags, and Tommy had annually ringed most of the chicks, at least until

Plate 121. Tommy Daniels, Ailsa Craig, August 2018. © *B. Zonfrillo*

Mink arrived and decimated the colony. He was one of the first to volunteer for Ailsa Craig at the time I was planning the rat eradication, and knew the island well. He also knew this had to work, and it did. A small but ever-growing Puffin colony now thrives on the island. Tommy and my team of students and friends had played their part. He also volunteered as a warden at the Endrick Mouth, Loch Lomond, thanks to persuasion by the late John Mitchell.

When *The Birds of Scotland* was under way, we (the editors) needed someone to illustrate the species for which we had no photos, e.g., Eskimo Curlew. Tommy willingly answered the call and produced a series of scraperboard illustrations just as was needed. Museum skins were examined, and Tommy borrowed some of my Canadian bird skins from which to work. He also read over original descriptions to place the birds in the kind of habitat where they were first seen in Scotland. He even phoned some observers to chat about their encounters first-hand. He illustrated local bird reports for the Clyde Area for many years. Tommy loved owls, and I guess their more rounded appearance helped with the carving aspect he enjoyed so much as a sculptor.

He died aged 81 on 9 January 2023 at the Beatson Institute in Glasgow, and is survived by his wife Anne and children Stephen, Karen, Paul, and Brian, and his four grandchildren, Harry, Coll, Rebecca and Michael

Bernie Zonfrillo

Geoff Shaw (1950–2023)

On 3 January 2023, Scottish ornithology lost one of its gentle giants, Geoff Shaw. He died suddenly and unexpectedly, aged 72, at home in Galloway with his wife Lynda at his side as she had been for 55 years. Born on 1 December 1950 in Nottingham, he moved to Glentrool in 1969 soon after he and Lynda married. They both shared a passion for butterflies and moths, but it was an encounter with the artist Donald Watson that inspired him to study birds and proved a pivotal moment in Geoff's life. He switched his course at Stirling University from history to biology. Despite not even having a biology O-level, he secured the first-year prize for biology and graduated with one of only two first-class honours degrees in 1976. His degree project focussed on Dippers and he was undoubtedly PhD material, but he wanted a career outdoors. The Forestry Commission offered him a job and a smallholding on the banks of the Water of Minnoch in Galloway. From his early focus on deer control, Geoff ultimately oversaw the Forestry Commission's wildlife conservation work in Galloway Forest Park. As their leading ranger for bird conservation, he co-led the Forest Birds of Galloway Project in the mid-1990s, beginning to tackle the long term challenge of how to make huge commercial forests more productive for uncommon birds.

He was a founding member of Southwest Scotland Raptor Study Group in 1983, and of the Dumfries & Galloway group in 1990. Having monitored breeding Barn Owls in derelict buildings in forests from the late 1970s, he developed the Forest Nest Box Project with Andy Dowell. By the mid-90s, their boxes supported 50–60 breeding pairs which, given that barn owls can breed over nine months, required a remarkable commitment to check, re-check, trap and ring birds. As a result of this work on upland forest barn owls, Geoff was sought after as a collaborator. He edited the British Trust for Ornithology's Owl Study Group Newsletter for many years and recorded and published extensively on Barn and Short-eared Owls, as well as other species, in journals such as *Bird Study*, *British Birds*, and *Scottish Birds*. He authored the chapter on the Barn Owl in *The Birds of Scotland* (2007).

Geoff was a member of the BTO for fifty years, and was their regional representative in Kirkcudbrightshire for 11 years. He was a keen ringer, trainer, former Chair and Honorary Member of North Solway Ringing Group. His passion, dedication and expertise is apparent from the data he submitted. As an insight to the scale of Geoff's contribution, his bird and raptor

Plate 122. Geoff Shaw at Osprey site, Ayrshire, July 2021. © *T. Greenaway*

group reports and computerised ringing records since 1986 alone document well over 3,000 birds ringed. These comprise over 50 species and include hundreds of Barn Owls and Swallows and many of the small passerines he observed and enjoyed around his home. He was an active surveyor in countless BTO schemes, and for the last BTO Bird Atlas 2007–2011 he contributed 352 submissions of data which contained 713 individual observations of birds. All this in the context of living defiantly with Parkinson's disease for many years and being at the head of a wonderful family with five children, eight grandchildren and three great grandchildren. His eldest son, Deryk, has well and truly followed in Geoff's footsteps, serving as warden of Fair Isle Bird Observatory from 1999–2010.

Geoff's deep love, fascination and enthusiasm for the everyday habits and behaviour of birds shone through and rubbed off on anyone he spent time with. As his activities became increasingly constrained by his severe illness, watching his local birds was a great comfort to Geoff, whether that was rejoicing at the return of Swallows and Sedge Warblers around his home in spring, to looking through countless Chaffinches in winter for the elusive prize of a few Bramblings from Fennoscandia. But, even this cruel disease could not stop him getting out to ring Ospreys nesting on a nearby platform, the building of which he had instigated.

Many will have benefited from Geoff's endless patience and his willingness to share his fascination with birds and to teach and guide others in field crafts that came so naturally to him. This, combined with his resolute determination to make a difference made Geoff a kind, quiet, and unstoppable force for good for birds and the natural world. He never sought recognition or reward, he simply strove to do all he could to protect and secure the future of wildlife he loved. Geoff was a thoughtful, determined, and hugely respected field ornithologist. He leaves a great legacy in his data and observations and in those he guided and mentored and he will be very much missed.

Juliet Vickery (CEO of British Trust for Ornithology, to whom Geoff was a guiding influence and friend since her PhD fieldwork in Dumfries and Galloway in 1980s)

Chris Rollie (Former RSPB Area Manager Dumfries & Galloway and friend of 40 years)

BOOK REVIEWS

The book reviews published in *Scottish Birds* reflect the views of the named reviewers and not those of the SOC.

When the Kite Builds... WHY and HOW We Restored Red Kites across Britain

Mike Pienkowski, 2023, UK Overseas Territories Conservation Forum, Peterborough, ISBN 978-1-911097-05-1, hardback, 271 pages, 200+ colour photos, 40+ colour & b/w illustrations and maps, £29.95

The reintroduction of the Red Kite to parts of the United Kingdom is arguably one of the greatest conservation success stories of recent times. It has been estimated there are now around 6,000 breeding pairs, which represents at least 15% of their European and world population.

The experimental reintroduction to England and Scotland was originally a joint programme between the Nature Conservancy Council (NCC) and the Royal Society for the Protection of Birds (RSPB). At the start of this initiative in 1989, Dr Mike Pienkowski was the NCC Head of Ornithology and Chairman of the Project Team. The idea for the reintroduction to Scotland was stimulated by Roy Dennis. My role for RSPB Scotland was as the first permanent Project Officer to oversee the Scottish reintroduction programme on the Black Isle, Easter Ross, Highland. Subsequent releases in Scotland took place in Stirling (1996), Dumfries and Galloway (2001) and Aberdeen (2007). As a result we currently have an estimated 400–450 breeding pairs in Scotland where they have recolonised much of the range they occupied before their extinction as a breeding species through human persecution around 1870.

Mike Pienkowski is well placed to document how this ground-breaking conservation project emerged and developed. Lessons have been learned on how various obstacles were overcome and best practice approaches that have proved useful for reintroductions or translocations of other raptors in the UK and abroad. Although the main focus of the book is on the Red Kite reintroductions to England, details are also given of the Scottish project. Pienkowski's access to previously unpublished NCC records of the early deliberations concerning the programme make particularly interesting reading. I recommend this book for any with an interest both in raptor reintroductions in general and as an important historical reference point for Red Kite conservation in particular across the UK and Europe.

Duncan Orr-Ewing

Best days with Shetland's birds

Andrew Harrop & Rebecca Nason (editors), 2022,The Shetland Times Ltd, Lerwick, ISBN 978-1-910-99745-1, paperback, 120 pages, £17.99.

This series of accounts from Shetland residents and migrant birders has it all. Yes, there are mouth-watering accounts of rarities and days full of rare birds, but each story offers more. What we end up reading about is Shetland life and a community that enjoys seeing the birds of these islands. The stories are written with an affection for the local birds and in many cases, a deep personal connection to a place. Quite often the big rarities are a side-line – a product of the hard work and skill that come from such a personal connection to a patch – with just that bit of luck acknowledged for good measure. Enough of this background flows through these bitesize stories to make a much more rounded read than one would get from a simple collection of finders' accounts of rare birds. The rarities are the envelopes within which these love letters to the islands, the birds, the build-up, the excitement of the find, the panic and the relief of it all are sent. As birders it's that whole package that we love and these stories capture it all beautifully.

Mark Lewis

Birds of Ecuador and the Galápagos Islands: A Photographic Guide

Helm Wildlife Guides. Juan Freile & Murray Cooper, 2023. Helm, London, ISBN: 978-1-4729-9337-3, 224 pages, softback, colour photos, one colour map, £16.99.

I was especially pleased for the opportunity to review this book as my last, pre-pandemic, trip was to this destination. These Helm Wildlife Guides are attractive, truly pocket-sized photo-guides - this one weighs just 388g. Ecuador, and the Galápagos Islands (which lie 900 km offshore in the Pacific Ocean) have an avifauna of approximately 1,700 species, 332 of those most likely to be encountered are covered in this book. The photographs are generally of exceptional quality, mostly taken by Murray Cooper and three other credited photographers. Each species is accompanied by a paragraph of concise descriptive text followed by a "where to see" sentence or two. There are no distribution maps. The first 20 pages of the book includes a map and 60 or so of the best birding sites: Amazon basin; the Andes (including the cloud forest); the coastal lowlands and the Galápagos archipelago. There is an index of species (English names only) at the end.

It is certainly appealing to have an all-in-one book covering both mainland Ecuador and the offshore islands. The result, not surprisingly, is somewhat of a compromise. The standard field guide *Birds of Ecuador* by Freile & Restall is superb and covers "every species" found in mainland Ecuador but does weigh 1.17kg and costs more than £30. However, it can be used to identify all 132 species of hummingbirds in the region compared to just 30 portrayed in the photo-guide (and even many of these are illustrated by just one sex). The large guide does not include birds found only in the Galápagos Islands. For these I used *The Birds, Mammals and Reptiles of the Galápagos Islands*, 2nd edition by Swash & Still which has the added advantage that it's not just the birds that are included (and it weighs only 315g). The Helm Guide describes Darwin's Finches, although only six are illustrated, compared to 13 in the Swash & Still book. The latter also has useful comparison plates of all the beaks rather than photos of single sexes in the Helm guide. Other disappointments are that: only eight species of waders are included (compared to 34 in the Swash & Still book for the Galápagos Islands alone); only one of the four species of mockingbirds found on the Galápagos Islands is portrayed and the endemic Flightless Cormorant is omitted altogether.

In summary, this compact guide is an attractive book that will appeal to the traveller with a general interest in the birds which might be encountered in the whole region. However, the serious birder will be much better served by *Birds of Ecuador*. For the Galápagos alone, one of the guides dedicated to the birds and other wildlife of the islands would be preferable.

Ian Poxton

New Books also received in the George Waterston Library

RSPB How to Photograph Garden Birds. Mark Carwardine, 2023. Bloomsbury Publishing plc. ISBN 978-1-399-40454-9, paperback, 175 pages. £18.99.

Birds of Bali, Sumatra and Java. Tony Tilford, 2022. Bloomsbury Publishing plc. ISBN 978-1-4729-8687-0, paperback, 224 pages. £16.99.

The George Waterston Library is open for browsing and borrowing during Waterston House opening hours (check SOC website). Books can either be borrowed directly or can be posted out (UK only, conditions and p&p charges apply) by emailing the Librarian: Library@the-soc.org.uk

OBSERVATORIES' ROUNDUP

Observatories' Roundup is a regular bi-annual feature about our bird observatories in Scotland. The intention is to publicise the work of the observatories, visiting opportunities, as well as incidental snippets of news from the islands.

Fair Isle

October is a hotly anticipated month for anyone birding on Fair Isle, with the potential for several of the classic 'Fair Isle specials' to turn up, as well as any number of major rarities. Despite being dominated by strong westerly-based winds, the October of 2022 saw plenty of brilliant late-autumn birding, and although the elusive 'biggie' failed to make an appearance, there was no shortage of excitement to be had.

The month got off to an excellent start, with a lingering Pallas's Grasshopper Warbler at Quoy (going on to become the isle's longest-staying ever) and 'Hornemann's Arctic Redpoll' making up the BB rarities on the first day of October, with a Red-flanked Bluetail around Burkle adding some colour to the mix. A good supporting cast of scarcities included a Corncrake that was trapped in the abandoned buildings by the Mast, before being released into the much more hospitable Obs. garden. A Barred Warbler on the cliffs of Dronger, singles of Bluethroat and Great Spotted Woodpecker, and a scattering of Yellow-browed Warblers meant there was plenty to see around the isle.

Plate 123. 'Black-bellied' Dipper, Wirvie Burn, Fair Isle, 20 October 2022. © *Alex Penn*

The next day saw the arrival of a pristine juvenile American Golden Plover, the twelfth record for the isle, which showed brilliantly at the Airstrip for the finder, but flushed just as the nearest birders arrived to see it. Several frustratingly brief and possible sightings followed over the next couple of days before it was finally tracked down two days later on Vaasetter, giving excellent views to its appreciative admirers. The same day saw the first major thrush arrival of the autumn, with swirling flocks of some 3,000 '*tseep*'-ing Redwings regularly harried by Merlin and Sparrowhawk looking for an easy meal.

Poor weather dominated the next week, with strong south-westerly winds and heavy showers making birding tricky, and the forecast devoid of the easterlies we all hope for at this crucial time of year. Wildfowl passage continued unabated, with Pink-footed, Barnacle and Greylag Geese passing noisily overhead, joined by several groups of Whooper Swans. An Olive-backed Pipit arrived on 7th despite the winds, but passerines were generally thin on the ground. A further two 'Hornemann's Arctic Redpolls' arrived on 11th and 13th, with Iceland and Glaucous Gulls, Slavonian Grebe, Grey Phalarope and Long-tailed Duck passage contributing to the decidedly wintry feel of the middle of the month.

The autumn wasn't over yet however, with White-tailed Eagle on 18th–19th, a Little Bunting in the classic location of Pund ditch also on 19th, and a 'Black-bellied' Dipper '*zitt*'-ing up and down Wirvie Burn on 20th. Some excellent late-autumn birding on the latter date also produced good island birds in the form of

Plate 124. Waxwing, Pietron, Fair Isle, 28 October 2022. © *Alex Penn*

Gadwall, Greenland White-fronted Geese, Siberian Chiffchaffs, Jackdaw and the first Little Auk of the autumn. Easterly winds on 22nd delivered the second Red-throated Pipit of the year, with a smart adult touring the north-west, as well as good numbers of thrushes, with a clear arrival of Long-eared Owls following them across the North Sea.

A downside of easterlies on Fair Isle is that they often bring with them plenty of fog, and the next few days were frustratingly heavy with it. Despite the poor visibility, the 24th saw the arrival of the first Waxwing of the autumn at Burkle, appearing the same day as a very late Hoopoe at South Light, which looked decidedly unhappy in the cold, damp conditions - a somewhat bizarre combination of species. The last days of October passed with little change, but southerly winds at the beginning of November brought a fresh arrival of migrants, with some exciting birding to see out the seasonal staff's final few days. Two Great Grey Shrikes graced the south of the isle (one of which was seen predating Snow Buntings around the crofts!) as well as a gem of a Firecrest trapped in Plantation - the 11th island record.

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Isle of May

The final few months of the migration season proved very eventful as the island produced some noteworthy records and some much sought after birds. The month of October was a mixed month, as westerly winds dominated early. Two juvenile Sabine's Gulls seen feeding off the north end of the island on 2nd and 18th with a Mediterranean Gull recorded on 14th, were noticeable highlights. The pick of the wildfowl movement during this period included 14 Scaup south on 6th whilst the first Whooper Swans of the autumn were seen moving south on five dates.

However, all eyes were on an easterly weather-front hitting the island from 18th–21st and for once, it lived up to expectations. A large fall during this period included some stars of the show; a stunning Red-flanked Bluetail in the Top Trap garden which was later caught and ringed on the 19th. Incredibly, a different bird was found the following day below the dam at Milldoor and these represented the third and fourth island records. Other noteworthy birds during this purple patch included two Pallas's Warbler on 19th, Radde's Warbler on 20th–21st, Barred Warbler at the dam on 20th (the season's only record) and a Red-breasted Flycatcher at Alterstanes on 20th. The fall was impressive and the aftermath also brought further reward as a noteworthy influx of owls including 18 Long-eared and 12 Short-eared Owls on 21st with several lingering over the following weeks. Two 'ringtail' Hen Harriers were recorded on 13th and 20th, whilst individual swift sp. briefly seen heading south on 25th and 26th, were birds that got away, especially considering the national influx of Pallid Swifts at that time. Island highlights late in the month included a single Long-tailed Tit on 27th, the first Lapland Buntings of the autumn and Crossbills recorded on passage on three dates.

November has become a month of interest over the last few years as bird migration extends well into the month, as a result, observer coverage on the island is also extending. This proved very fruitful, with some noteworthy highlights including a short staying Olive-backed Pipit on 1st, discovered along Holyman's Road as dusk approached. The bird was not present the next

day but represents the twelfth island record but eighth since 2015 showing an increase mirrored nationally. A pair of Raven returned to the west cliffs on 2nd and may have been the same pair which checked the area out in February, and in the previous autumn. A scattering of Black Redstarts and late Chiffchaffs were trumped by a stunning Pallas's Warbler which lingered along Holymans Road on 7th–9th, the third record this year and proving that recording in November is worthwhile with three November records since 2019.

All recording areas have their quirks and islands are no different, as a Red-necked Grebe on 1st, Black-throated Diver on 2nd and a herd of nine Mute Swans on 11th, were all noteworthy records. However, these records paled into insignificance compared to the sighting on 10th as a Little Egret arrived from the south and remained on the island for the afternoon; only the second ever record following the first on 29 May 2009. Sea-watching continued to prove fruitful with reasonable numbers of Little Auks peaking at 147, with a Black Guillemot on 3rd. A Cory's Shearwater discovered feeding in a gull frenzy off the north end for two days from 10–11 November was an outrageous record (but maybe not, considering it has been a great season for large shearwaters).

The month continued to provide, as a northerly blast produced more Little Auks, and a stunning partial summer-plumage White-billed Diver, the third for the island, was discovered rafting with Shags off the west side on 17th and was seen in the surf the following morning. Other noteworthy records during this period included a White-fronted Goose briefly on 17th (the fifth island record and first since 2011) whilst an over-wintering Little Grebe was of island interest. As the recording year came to a close, the final new bird of the season was discovered on 12 December; a Moorhen, a scarce island visitor which brought the year list to 178, the second highest ever.

The winter months are generally quiet as the island has just a handful of passerines overwintering although at sea, four Black Guillemots in mid-December was noteworthy. The New Year produced a Little Grebe on the Loch (a species which is becoming an annual visitor) and a scattering of Little Auks off the north end. The tail end of the winter produced an immature Glaucous Gull at roost on Rona on 28 February whilst a summer-plumage Black Guillemot was off the north end on 3 March.

Low Trap replacement

Since 2017, the Isle of May Bird Observatory Trust have implemented a full-scale replacement Heligoland trap programme, demolishing and replacing the four traps on the island. Three of the four traps had been replaced up to 2019, but due to the onset of COVID-19, there was a halt to proceedings. This spring, the final trap – the Low Trap – was replaced.

Plate 125. The Low Trap contruction team (L–R): Bill Taylor, Ian Harrison, Mick Marquiss, Brian Etheridge, Ron Graham and Iain English, Isle of May, 17 March 2023. © *David Steel*

Plate 126a & b. Low Trap before © *IOMBOT,* and after replacement, spring 2023, Isle of May. © *Iain English*

For many, the Low Trap on the island represents the start of modern day bird recording, and the birth of the Isle of May Bird Observatory as it was the first to be constructed during the autumn of 1934. The Obs. daily log recalls those pioneering days as on 28 September a team of four consisting of W.B. Alexander, R.M. Lockley, E.V. Watson and H.F.D. Elder landed on the island armed with wood, wire netting and other materials ready to erect this first trap. The total cost of materials was £21 and construction started soon after. On 3 October 1934, the first ever drive produced the capture of four birds ready to be ringed and processed. It comprised of Blackbird, Wren, Song Thrush and Goldcrest.

Since then the Low Trap has gone on to be one of the most successful and well-used traps on the island, catching thousands of birds from common migrants to rare vagrants. Over the years it has had various patch repairs but eventually the trap needed replacing. On Saturday 4 May 2022, a team of four arrived on the island: Brian Etheridge, Iain English, Ron Graham and Bill Taylor, with a further two; Mick Marquiss and Ian Harrison joining the following Saturday and they set about dismantling the old trap and constructing the new. Despite serious weather setbacks, including snow (a rarity on the island) and rain, the team worked tirelessly on the build and completing it in just fourteen days. The new trap follows the same design and footprint as the previous trap and the impressive construction will hopefully last for many decades to come.

Weather woes

The winter months were generally mild on the island through most of the winter, but a northerly front in early March produced a good covering of snow across the island. Snow is rarely recorded, with the previous occurrence in February 2021 which brought a lot of Woodcock to the island as birds escaped the frozen mainland. Previous to that, the most famous snow event in modern day history occurred in March 2018, as heavy snow drifted and settled across the island as part of the 'Beast from the East' and will be remembered for a long time to come.

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North Ronaldsay

With September ending on such a high, with a White's Thrush out of seemingly nowhere, October would have to swing hard to compete - and it did just that! Two Lanceolated Warblers in two days; the first found in the wildflower

Plate 127. Lanceolated Warbler, North Ronaldsay, Orkney, 2 October 2022. © *George Gay*

Plate 128. Hume's Warbler, North Ronaldsay, Orkney, 29 October 2022. © *George Gay*

crop near Kirbest and the second a day later on the dyke running away from T1 to the coastal heath near the Obs. That day also saw a Turtle Dove and Olive-backed Pipit re-appear and the first Buff-breasted Sandpiper and Grey Phalarope of the year - not a bad way to get October kicked-off! Things did settle down for a few days, we said goodbye to Aidan on 6th but the autumn continued to offer up birds as the month rolled on. A total of ten Grey Phalaropes and another Red-necked Phalarope on the 7th kept spirits high and rightly so. The 10th saw our second Great Snipe of the year burst from cover near the Shooting Gallery, and it eventually showed well for everyone. It was followed by a third (or maybe the same bird) four days later between North and South Gravity. A Little Bunting was seen briefly at Haskie on 17th, but the 18th provided one of those birds that 'island listers' love (or hate if you've seen one and it's a blocker for other listers!) in the shape of the island's seventh Red-necked Grebe passing Dennishead in the afternoon. The Grebe was followed by another of these island favourites; our eighth record of Firecrest - there was potentially a ninth but with a bit of uncertainty we'd have to wait a couple of weeks for that! The 22nd was better again, the day started with news of a Red-throated Pipit near Kirbest and it wasn't long until the next goody appeared; a 'strange Sylvia warbler' on the West Side turned out to be a very tricky looking Subalpine Warbler – the bird was trapped and dropped feathers collected for DNA analysis – the DNA returned as an Eastern Subalpine Warbler.

The omens were good for a magical 23rd and we didn't half get one! Dante started the day by finding another White's Thrush near the Beacon on his way to go sea-watching (talk about jammy!), another phone call about an interesting Lesser Whitethroat that would eventually transpire to be Britain's ninth Central Asian Lesser Whitethroat and... between looking at the Lesser Whitethroat and going for seconds of the White's Thrush, an Eastern Black Redstart was discovered feeding around the Bewan Punds - what a day!

A White-billed Diver passed the Beacon on 28 October, then the 29th produced the island's third record of Hume's Warbler (formerly Hume's Yellow-browed Warbler).

November had a lot to live up to and with most of the Obs. Staff having now left the island, begrudgingly in some cases (George and Tom), things fell to Dante and Lauren to grip us off - it didn't take long. With the final staff member leaving in the morning, they waited until the afternoon of the 9th to find the island's second record of Black-throated Thrush near Trinley. I'm told it would have been nearly impossible to twitch on island, the thrush vanished quickly, which makes me feel a bit better, I suppose?

A full nine days later, Dante and Lauren produced a first for North Ronaldsay, it honestly couldn't be more fitting - a first-winter Caspian Gull and a classic one at that!

With Dante and Lauren off the island we could all relax a bit and enjoy our Christmases! George and Alison both got well deserved holidays, Alison went to Italy via Thetford and George managed ten days in Spain, followed by a whole month in India!

With the 2023 season getting off to a slow start, it's time for report writing, repairs and making the Obs. look ship-shape ready for the season ahead. Tom and Maddy return tomorrow, as I'm writing this (25 March) and we're looking forward to 2023 and all its birds!

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Plate 129. Hume's Warbler, Grutness, Shetland, 7 November 2022. © *Roger Riddington*

The Virkie 10k: a Shetland GREEN year list

R. RIDDINGTON

In birding, the concept of the year list – the number of species seen in a calendar year, in a defined area – has been around for a long time. Its popularity waxes and wanes but the climate crisis (and to some extent the COVID-19 pandemic) has meant that local-patch and 'green' listing have become increasingly popular. So much so that 'full-fat' year listing, gobbling up thousands of miles on the road, with plane journeys and boat trips to remote islands, is in danger of fading away or becoming the pursuit of dinosaurs - at least at a national scale.

On my old patch of Gibraltar Point, in Lincolnshire, Skeg stalwarts Rob Watson and Nige Lound have been green-listing for years, and I've always taken an interest in their totals (typically close to 200 in a reasonable year). I first kept a green list in Siracusa, during a six-week stay in the early spring of 2019; partly because getting around Sicilian towns is often easier on a bike, partly because we hired a car only occasionally. Then, in March 2020, the first COVID-19 lockdown sparked more effort at local patching on foot and by bike in Shetland. I got quite into it during the spring of 2020 but work and family commitments away from Shetland intervened in the autumn, my effort fell away and my 2020 green year list was an unremarkable 165.

Since I knew that I was likely to be in Shetland for most of the spring and autumn of 2022, I contemplated a more concerted effort. Full-blown year listing has always worried me a bit. I've witnessed two friends – Paul Harvey in 2001 and 2013 and Phil Harris in 2021 – trying to break the Shetland year list record, in each case successfully. The effort, cost and carbon involved plus the disruption to family and indeed birding life seemed, frankly, crazy. Who wants to drive all the way to Unst for a Tree Sparrow on a spring morning when there could be *anything* lurking undiscovered in the south mainland? But surely green-listing would be more sensible. The effort would be high but the cost low, the carbon very low and the effect on family life low (or at least low-ish? - best ask my wife Agnes). As for the impact on my birding, well, in theory surely I might find just as much as I would otherwise have done? In the end, I decided to do what most year-listers do, whether or not they admit it: make a start and review progress as the year unfolded. Even if I abandoned I'd have plenty of miles in my legs, which would be all to the good.

For the attempt, I opted to give myself a limited patch. I first became aware of the 10k concept (birding within a radius of 10 km of a given

point, typically your front door) in an article in *British Birds* by some keen student birders based at the University of Exeter's Penryn campus, who wrote about birding the 'Tremough 10k' (*British Birds* 114: 185–186). I reckoned that the 'Virkie 10k' would suit me just fine. It would save the potential tedium of relatively long bikes rides for relatively unremarkable birds on a day when that effort would be better spent searching areas closer to home. The rules were simple. For a species to count, the journey out from and back to home must be completed on foot or by bike, no car journeys allowed, anywhere. (That might seem blindingly obvious but it was surprising how many people seemed to think that if I got there to see the bird on foot or by bike then surely I could get a lift home?) However, it doesn't matter if you've happened to see a species by car first *as long as* you go home and repeat the journey from scratch 'green'. Morally, it might be ideal to do no birding at all by car but... them's the rules, this is Shetland, there is a lot of *really* unpleasant weather for biking in the winter and, invariably, there are a few things that you see first from a car and then have to go back to by bike. For the record, I used a standard road bike (and nothing fancy, an 18-year-old aluminium-framed *Specialised*, with flat bars and plenty of gears).

January started with strong southeast winds and a New Year's Day list from the garden (35 species, which is definitely a beatable total). January is seldom a memorable month in Shetland, and so it proved in 2022. One of the highlight birds was a Grey Phalarope at Ireland in a westerly gale on 3 January. Ireland is just beyond my 10 km limit, which pleased me greatly since it would have been a thoroughly miserable and possibly unsafe bike ride. I went to see it in my van and was pleased that I did. The bike first came out on 5 January, in fact, when a lap of Quendale took in a Glossy Ibis in the Eel Burn. There were other rides on a few of the more clement days, which yielded other half-decent winter birds for the Ness, such as Goosander, Little Auk and Black Redstart. I still did some local birding in a vehicle, mostly in less pleasant weather, but also for my WeBS counts, since a vehicle is an effective hide for counting waterbirds. A telescope and tripod is a pig of a thing to carry on a bike on a windy day, and the set-up is no match for using a 'scope from the shelter of the driving seat. January ended with a modest **73 green** (78 total in the Virkie 10k i.e. including birds seen only with the help of a vehicle).

We were away in late January and early February, and didn't miss much. However, green ticks in **February** included two useful American ducks: the drake Ring-necked Duck that had spent the winter in the Tingwall valley migrated south to the Loch of Brow while we were away, and then a drake Green-winged Teal appeared at Hillwell. There was little sign of the approaching spring by the end of the month, and the 10k list for the end of February was **77 green** (82 total).

March continued in similar vein – evidence of migration was limited but there were still a few noteworthy additions to my green list – among them, and all at Loch of Spiggie, Canada Goose, Great White Egret and Common Buzzard. That's a trio of species that many mainland birders would nowadays struggle to stifle a yawn over but they're all valuable additions to any Shetland year list. March **85 green** (90 total).

For Shetland birders, **April** is a month that promises so much and typically delivers very little, and 2022 was no exception. Nonetheless, the extra daylight, generally better weather for cycling and a trickle of migrants were all welcome. Highlights included a Goldfinch in the

Plate 130. Goldfinch, Virkie, Shetland, 5 April 2022. *© Roger Riddington*

garden, my only Lapland Bunting of the year (a smart male, at Hillwell), a small arrival of Hawfinches and a splendid Red Kite, which spent a few days touring the Ness. Vagrant raptors (and other big, drifty things, such as cranes) are often especially hard to connect with on a bike, so I was pleased to get Common Buzzard and Red Kite by the end of April (**118 green**, 120 total).

May is generally *the* month for spring birding in the far north, even though the weather often remains unpleasantly cold for the first half of the month. May 2022 was pretty mixed for me. It started sedately; Garganey was the main addition of the first week, but the second week added Great Crested Grebe, Little Egret, two gorgeous Dotterels at Spiggie and the returning Long-tailed Skua at Dalsetter. I was delighted to see the skua on a sunny evening when the bird put heart and soul into a spectacular aerial dogfight with the local Arctic Skuas. Sadly, little more than a week later, the Long-tailed was picked up dead, a victim of the avian flu epidemic that will be one of the defining memories of 2022. In the third week of May I was working, guiding a week-long birding tour for Shetland Nature. It meant that I was out all day every day, but it was hopeless for green-listing. I saw White-billed Diver and White-tailed Eagle on my 10k patch, but since I was driving a minibus they didn't count (and I never managed to pull them back either). There were many other things I missed too - some of them I did eventually see later in the year but for others, such as Cuckoo and Golden Oriole, the opportunity was already gone. That week really reinforced the point that you need to be around for the whole of the spring and the autumn if you're serious about maximising your total - one key week can make all the difference. I was back home, and back on my bike, on 21 May, and that day was the best one for the rest of the month. A singing male Blue-headed Wagtail at the Pool of Virkie was bird of the day, and in some ways bird of the spring for me. Against the odds, the male managed to attract a female and the pair duly bred successfully (for only the second time in Shetland) - the first attempt was predated at the chick stage but at least four young fledged after the second attempt. Also at Virkie on 21 May were Little Stint and Hobby, which kept the list ticking over: May **136 green** (142 total).

Plate 131. Dotterel, Spiggie, Shetland, 10 May 2022. © *Roger Riddington*

The first week of **June** was reasonably productive, with good weather to be out and about. A Temminck's Stint at Virkie on 1 June was an unexpected treat, Icterine Warbler and Common Rosefinch were more predictable but always good to see. The second week was less encouraging, although had I been able to get to a Broad-billed Sandpiper at Grutness it would have been a different story. A Honey-buzzard sitting in a roadside field at Virkie on 17 June was a nice surprise but I was in the van and there was no way that the bird was going to sit there long enough for me to be able to nip home and return by bike (and it didn't). That bird more or less marked the end of the spring: my log for 18 June read: 'A westerly gale: no birds of note. The spring is over.'.

Plate 132. Broad-billed Sandpiper, Pool of Virkie, Shetland, 2 July 2022. © *Roger Riddington*

Plate 133. Pacific Swift, Sumburgh Head, Shetland, 19 June 2022. © *Roger Riddington*

The next day, 19 June, I set off in the morning for a day's moorland bird survey fieldwork. My departure was delayed by a Grey Plover on the Pool of Virkie (which meant I had to go back home, twitch it by bike, then set out again) but by mid-afternoon I was deep in the hills near Voe. At 14.49 I took a call from Phil Harris (we were doing the survey work between us, and he knew roughly where I was). He sounded tense, and simply said: 'Have you got those messages?'. That sounded ominous. And I hadn't: Pacific Swift at Sumburgh Head! I started to run; 20 minutes over rough, wet moorland got me back to the van (at least I was fit enough to run properly after all those bike rides). The 40 miles back to Sumburgh took a further 40 minutes, negotiating dawdling Sunday traffic. I arrived in the lighthouse car park, only to discover that the bird had flown off high to the south. Indeed, people were already waiting at the north end of Fair Isle. I said bad words. The year list was over.

I stayed around, more in hope than expectation. Sumburgh Head was full of birders and I tried to avoid all of them. And then I saw a swift, high over the cliffs on the west side of the Head. It looked basically like a Common Swift, but it also looked somewhat long-tailed. And then it banked: it had a white rump! Shetland's first Pacific Swift was on my list as well. The year list was back on! Eventually I went home and then, on a lovely evening – clear and sunny, with a moderate northerly – I went back on my bike and enjoyed some of my best views of a sensational little bird.

With two Manx Shearwaters off Virkie on 27 June, the half-way point of the year arrived with a tally of **147 green** (155 total). That compared pretty poorly with the lads in Lincolnshire (Rob was on 178), and I felt it was below-par for Shetland too. Despite many highlights there were holes everywhere, with many supposedly common migrants missing, including Whitethroat, Redstart, Whinchat and Tree Pipit. Notwithstanding the (eventual) euphoria of the swift, I was less than fully committed to a green autumn. I continued birding by bike more because I actually enjoyed it, at least when the weather was half-decent.

Counterintuitively, perhaps, **July** is one of my favourite birding months. Returning waders make the Pool of Virkie worth checking daily and July 2022 was no exception. On 2 July I found the Broad-billed Sandpiper, the same bird that had appeared briefly at Grutness on 8 June. (In between, this bird had settled in a phalarope mire at Levenwick, where it displayed in vain to the local Dunlins. It was within my 10k, but access was difficult and I was feeling uncommitted to my green list.) It was, however, unquestionably one of the highlights of my birding year when it appeared in front of me at Virkie. A smart adult White-rumped Sandpiper on 17 July was another of Virkie's waders of the year while the pools at Scatness produced a Pectoral Sandpiper on 20 July. A Common Crossbill in the garden on 19 July was my only one of the year, while four Common Swifts at Sumburgh Head on 24 July were both a year tick and a nice reminder of the Pacific. July **152 green** (159 total).

Plate 134. White-rumped Sandpiper, Pool of Virkie, Shetland, 17 July 2022. © *Roger Riddington*

The best bird of early **August**, the magnificent drake Harlequin in Unst, didn't affect my year list, just like Shetland's second Magpie, which had taken up residence in Sandness. In the latter part of August, I needed some easterlies and to start filling some of those common-bird-shaped holes in my green list. The weather was reasonable and I was out a lot; seawatching added European Storm-petrel and Sooty Shearwater, and there was a thin scatter of common migrants but in general progress was slow. On the last day of the month, in light northerlies, with decent birds being reported from both Unst and Fair Isle, I was out on my usual beat around Grutness and Sumburgh. I'd seen pretty much nothing in two hours until, right at the end of my circuit, four migrants in the Sumburgh Hotel garden included a Wryneck, a Barred Warbler and a Rosefinch. It seemed a good omen for September. August **162 green** (167 total).

When I first moved to Shetland, to Fair Isle in the early 1990s, **September** was always the best month of the autumn, and early September almost always brought a good fall of common migrants. Since 2000, that pattern has seldom been repeated. October is the new September and early September is now typically dominated by westerlies, which bring little in the way of drift migrants. In 2022, however, the first two weeks of September were a joyous throwback to the old days, with east winds and a fine selection of migrants. The first day of the month set the scene, with Greenish Warbler and Citrine Wagtail (as well as Reed Warbler and Tree Sparrow). Green highlights from the first half of the month included Arctic and Western Bonelli's Warblers, Ortolan (my first in Shetland since 2010) and Little Buntings. On 14 September, a ride to Spiggie gave me Marsh Harrier, Red-backed Shrike and Yellow-browed Warbler, while later in the day I was back out again, this time for a Great Spotted Woodpecker at Quendale, my first of an autumn when good numbers of juvenile Great Spots crossed the North Sea to Shetland. That day, the halfway point of September, was the first time that I started to think that a respectable green year list was a real possibility, and that I might at least get close to Gibraltar Point's finest.

The remainder of September was good value too. There was a Blyth's Reed Warbler in our garden, an early Olive-backed Pipit at Quendale and, one of the smartest birds of the autumn, a big snowball of a 'Hornemann's Arctic Redpoll' at Toab. In a remarkable autumn for Hornemann's, that bird was actually the only one I saw. The month finished with a distant Siberian Stonechat at Quendale and stats of **184 green** (189 total).

Counterintuitively, perhaps, **October** is becoming one of my least favourite birding months. Or at least, that's how it felt in 2022. The volume of visiting birders means that there is saturation coverage of my regular patches at the start of the month and, in a year when I was intent on staying close to home, it was more difficult to avoid the crowds and find my own birds. In addition, I'd been mostly lucky with twitching local rarities in September but to some extent that luck ran out in October. When the Least Bittern was found at Spiggie, I was on Fetlar for a day of beached bird surveys, and in no place to do anything about seeing that bird by bike. The Quendale Siberian Rubythroat didn't play ball either, while the two Myrtle Warblers in south mainland were both just beyond the boundary of the Virkie 10k. In terms of numbers, it was still a successful month for green ticks: Oriental Turtle Dove at Quendale and Desert Wheatear at Scatness were the rarity highlights but there were plenty of scarce

Plate 135. Desert Wheatear, Scatness, Shetland, 22 October 2022. © *Roger Riddington*

migrants for those gaps that you hope will be filled but are far from certain: Great Grey Shrike, Dusky Warbler, Bluethroat and Northern Bullfinch among them. Predictably, the weather started to become more difficult for birding by bike, and there were some battling rides in unpleasant conditions, notably for Brent Goose, Pochard and Grey Phalarope. October **197 green** (202 total).

The first week of November usually represents the last knockings of autumn proper, and in 2022 it duly produced some nice birding. Highlights included a Hume's Warbler at Grutness and an American Wigeon at Spiggie, a not untypical east-meets-west combo. In mid-month, a period of SE gales failed to produce the hoped-for Pomarine Skua, but an arrival of White-fronted Geese heralded the first Bean Geese of the autumn. The weather was not conducive to being out on a bike, however, even for short distances, and I remained stuck on 199 for a while. On 20 November, the wind was still a SE gale but the weather was bright and dry; I left my bike in the garage and set out on foot. By dark, a ten-mile walk had been rewarded with a Tundra Bean Goose at Noss and then a Jackdaw in John Morton's garden, finally taking me through the 200 barrier. In what remained of November, there were one or two days when it was fit to get out by bike and I managed to winkle out another three green ticks: Little Gull at Virkie, Taiga Bean Goose at Spiggie and a ringtail Hen Harrier at Hillwell: **204 green** (209 total).

In December, a Mistle Thrush at Brake on 6 December was the only green tick of the month but was particularly satisfying given that I'd missed two birds on Compass Head in mid-April, and then reluctantly decided that the two large thrushes flying over on the way to Quendale in early November were untickable views. In contrast, the late Pomarine Skua that I'd given up looking for in November materialised at Grutness on 22 December, but on a day with a fresh N/NE when I'd left the bike at home. Ironically, when I first saw the bird it was closer to my house than it was to me. I drove home at top speed but it had already disappeared, and the year list finished with that Mistle Thrush: **205 green** (211 total).

So... the final total of 205 (including eight national rarities and 21 Shetland or Scottish rarities) felt respectable, and to be honest it was more than I expected at the start of the year. That's 205 to current IOC taxonomy, which includes three species of redpoll (perhaps likely to be revised downwards in due course), but not Common Pheasant, since the Shetland population is not currently considered self-sustaining. Surprisingly, it was slightly higher than Rob's 200 in Lincolnshire, where the weather is glorious but autumn birding is tougher. Inevitably, there were a few species that, with a bit more effort or a bit more luck, would have swelled my total - but that's the case with almost every year list. It was a good year to do a green list too - a provisional total of 286 species for the whole of Shetland (including Fair Isle) has been bettered only by 289 in 2021.

Did I enjoy it? Mostly, yes. I particularly enjoyed the late summer and early autumn, when the weather was good and most of the additions were birds that I was finding myself. In October, when most of the additions involved chasing birds discovered by other people, it felt distinctly less worthwhile - but that's year listing for you. It was my first serious attempt to do a year list of any description and I have no plans to do another, but it has strengthened my view that local patching and green birding is A Good Thing, and is usually more productive than traipsing off to other parts of the islands, at least when the weather is good. Even though I didn't have a particularly notable year for finding my own birds in 2022, I think it was just one of those years; there were only one or two days when heading out for a particular green tick might realistically have interfered with finding something myself.

I am especially grateful to everyone who found birds that were new for me in 2022 and reported them on the Shetland birding WhatsApp groups - I couldn't have done it without you. Given where we are with the state of our planet and the cost of motoring, I think we'll hear a lot more about green-listing in future and I look forward to seeing more people out birding on a bike in Shetland!

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Plate 136 a & b. Whiskered Tern, Loch of Forfar, 17 October 2022. The photos show the typical suspended post-breeding moult of an adult bird, where the inner primaries have already been replaced on the breeding grounds, while the outer three primaries are old, worn feathers which will not be replaced until arrival on the wintering grounds. The bill of the bird was surprisingly short and heavy compared to the other marsh terns, and several observers mentioned the structure to be reminiscent of Gull-billed Tern. © *Mark Wilkinson*

Whiskered Tern, Loch of Forfar, 16 October 2022 – first Angus & Dundee record

J. SQUIRE

I like to vary my birdwatching, I tend to bird Loch Leven during the week while I'm at work but enjoy birding elsewhere during the weekend. I'm not a religious county list keeper either.

Since my return to working at Loch Leven in 2022, I have been birding with Simon Ritchie. Simon now works with me at Loch Leven but still spends time at Montrose. We often bird Tangle-Ha' down to St Cyrus in Aberdeenshire. We often try other sites in Angus as well. By mid-October, other than routine Curlew Sandpiper, Little Stint and a Greenland White-fronted Goose, we'd struggled to find much, although we had experienced a little boost midweek when spotting a vagrant Cackling Goose at Loch Leven.

On the weekend of the 15 October Simon and I headed up to Montrose Basin to take part in the October Goose count with the Scottish Wildlife Trust staff at the centre. We counted our section and spotted a few bonus Brent Geese. We spent the rest of the day birding around St Cyrus and further north before retiring for the evening to Montrose.

On the morning of the 16th we were running out of ideas. We went to Rossie Spit and discussed our options. We were tired of flogging the coast. We came up with a plan to go to a few inland sites, get a McDonald's in Forfar and then watch the Liverpool and Manchester City match, while enjoying a few drinks back in Milnathort. Simon liked the sound of this plan because he'd recently begun to tire of my dawn until dusk manic birding.

I like Loch of Forfar, I often used to stop there on my way back from working up at Corrie Fee. I've seen some nice birds there in the past, Iceland, Glaucous and Kumlien's Gull spring to mind, and I once saw an Otter by the car park.

Plate 137. Whiskered Tern, Loch of Forfar, 17 October 2022. A rather stocky 'marsh tern' but still an incredibly agile bird, capable of many sudden twists and turns when actively feeding. © Kris Gibb

When we arrived at the east end of Forfar at around 14:00 hrs, the sunlight was fierce and a brisk wind was coming in from the south west. Viewing conditions were not perfect, but we noted a few Tufted Duck, Teal, Mallard and Gadwall.

Approximately 20 Black-headed Gull were feeding, but in amongst these was a single tern. I've seen both of the 'Commic' species before well into October but felt that this wasn't one. In the strong light the bird looked almost white all over with a capped look. The bird insisted on feeding on the other side of the loch and in the wind it was difficult to keep still to be able to get any sort of detail. I could see a shallow forked tail and I suggested to Simon that it was a marsh tern and he agreed.

Any marsh tern in October would be interesting. We could instantly rule out White-winged Tern as the bird only had subtle patches on the breast sides and lacked a white rump. Gull-billed and White-cheeked (you never know!) were also quickly ruled out. Viewing with telescopes was difficult to get any other details on the bird as it would often rise up to six metres above the surface and then dive into the water to catch prey. It was continually moving, often more than 100 metres away. I got a few grainy distant pictures, and I thought I'd failed when the bird was close. The pictures could have been anything! Simon noted the black eye mask and streaked head. Were we really looking at an adult Whiskered Tern in October? In Angus?

The bird was ranging from one end of the loch to the other. We decided to wait in the narrower neck in the middle of the loch. We could see the bird distantly feeding at the north. After a few impatient minutes we decided to see if we could get close views up there. While we were up there I reviewed the photos and realised I'd got one passable picture which showed the chunky structure, so I decided to share a back of the camera shot to a few of my Gloucestershire birding friends. Martin McGill doesn't usually get involved in these sorts of discussions but said that it looks good for a Whiskered. I also sent the picture to proud Angus exile Martin Scott who was probably abroad somewhere. Knowing how unforgiving the birding scene can be when putting out wrong information, I was still reluctant to put news out but Simon suggested putting out 'Marsh Tern Forfar' onto the local grapevine to see if it would attract any interest.

During the next while Simon and I went from one end of the loch to the other several times changing our strategy trying to get better photos of the birds. I walked 14,000 steps along the south side of the loch that afternoon!

At 16:00 hrs Martin Scott replied to me with "Whiskered Tern - First for Angus!" I released the news via my Twitter account "*Adult winter marsh tern on Forfar Loch. Consensus suggests Whiskered*". Simon phoned local birding legend Gus Guthrie who was doing an Angus year list and who was first on the scene at 17:00 hrs.

Ironically the bird was now showing very well at the east end of the loch to the assembled small crowd which consisted of Mark Wilkinson and Chris McGuigan, plus a few others.

The bird stayed until 23 October at least and was enjoyed by birders from around Scotland and also a few year listers from down south.

I've seen many Whiskered Terns over the years including a few in the UK, almost all have been adult summer birds apart from a few 1cy birds in Africa. It was an interesting bird to watch.

Description

Structure: A small tern, 2/3 the size of Black-headed Gull. Chunky 'marsh tern' shape with short broad wings and a very shallow forked tail. Thicker deeper based, pointed bill. **Upperparts:** In strong sunlight silver grey all over wings, rump and tail. The tail outers showed white. There was a subtle trailing dark edge to the wing. In less bright light the outer wing feathers looked dark. The head was streaked with a dark eye mask that started just in front of the eye extending to a point level with the peak of the crown. Subtle patches on the fore flank/breast making a largely incomplete collar. **Underparts:** White with possibly one dark feather towards the back on the right hand side? **Bare parts:** Bill was superficially black with a dark wine coloured base. The legs were red-black similar to the summer plumaged Black-headed Gull.

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This record is subject to acceptance by British Birds Rarities Committee (BBRC).

Status of Whiskered Tern in Scotland

After the first Scottish record at Carse Loch, Friar's Carse, Nithsdale, Dumfriesshire on 29 May 1894 (adult male, shot, now at National Museums of Scotland, specimen NMSZ 1895.148), there was a wait of more than 100 years until the second at Meikle Loch, NES on 27–29 June and 1–3 July 2001 (with the same bird visiting Loch of Strathbeg RSPB on 30 June). Since then, it has become slightly more regular with a further seven records between 2006 and 2019 (three Outer Hebrides, a further two in NES, another in D&G and a single in Argyll). However, compared to England and Wales, where there are 218 records to 2021, Whiskered Tern remains an extreme rarity in Scotland. The record considered here therefore becomes the tenth record for Scotland, and the latest yet, surpassing the only previous autumn record at Loch na Paisg, Baleshare, North Uist, Outer Hebrides on 29–30 September 2019.

Dusky Thrush at Pitcox, Dunbar, 21 October 2022 – first record for Lothian and mainland Scotland

M. FRASER

Pitcox Farm, just inland from Dunbar in East Lothian, is a place where the wind seems to blow more often than not. October 21 was unusually calm; it was also overcast and dry, so I thought I would take the rare opportunity of the ideal conditions for ringing and put up my mist nets.

As I got the nets up, there were small parties of Redwings and the occasional Brambling passing overhead, plus a good number of Goldcrests in the trees and bushes, so migrants were clearly on the move. By mid-afternoon, I'd caught almost 70 birds, although six Goldcrests and two Blackcaps were the only migrants amongst a selection of local residents.

At about 15:00 hrs, I set out on another round of checking the nets. Four short (six-metre) nets were sited in a narrow shelterbelt of low trees and shrubs running up a field margin. Having extracted a couple of Greenfinches, a Tree Sparrow and a Blackcap from the first three, I came to the last one. In it was a solitary bird, suspended quietly in the bottom shelf. I took one look at it and, with unusual restraint, said to myself: "Ooh, that's nice". Obviously a thrush, it had pale, dark-spotted underparts, a densely marked breast band, rusty-red underwing and edgings to the flight feathers and, particularly striking, a whopping great eye-stripe. It was a Dusky. I extracted it,

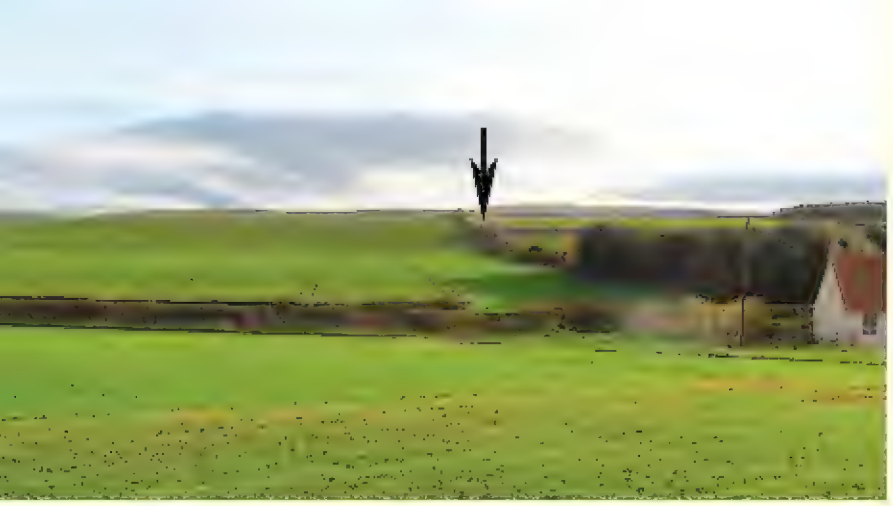

Plate 138. The unlikely setting for Scotland's first mainland Dusky Thrush - a narrow shelter belt of shrubs in open fields, with the Lammermuir Hills in the distance. The arrow shows the position of the mist net in which the bird was caught. © *Mike Fraser*

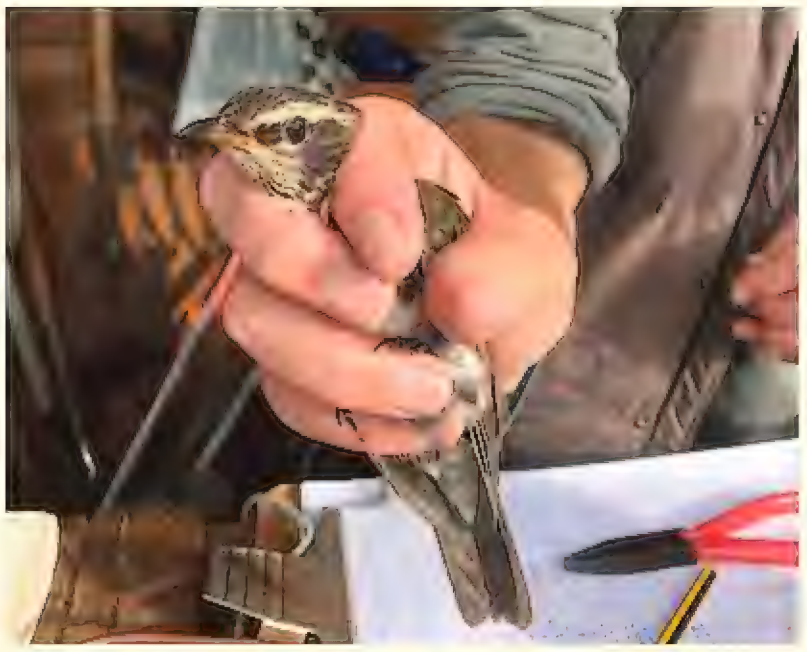

Plate 139. Dusky Thrush, Pitcox, Lothian 21 October 2022. An emergency through-the-ringing-hut-window phone shot to ensure the record. © *Liz Fraser*

popped it in a bag and headed back to my ringing hut (the potting shed in our garden).

When I got there, I found my wife, Liz, and a neighbour sitting on the garden bench having a blether. I gave them a cursory look but said nothing and went into the hut, bolting the door behind me - this was one bird that I did not want to escape. Liz could tell something was up. Looking through the hut window as I took the bird out of the bag, with similarly commendable restraint but more than a hint of disbelief, she asked "*What is that?* It's got an eye-stripe like a tchagra!" (being Southern Tchagra (*Tchagra tchagra)*, the most outrageously-superciliated bird she could think of at that moment). She took a couple of quick phone shots through the window for the record before I let her in to see the bird close-up, locking the door again!

Birds caught for ringing are held only as long as is necessary to process and ring them. During this short time the bird (a first-winter male judging from its relatively bold markings and the patterning of its outermost primary coverts), was photographed in the hand and then released in an adjacent woodland. It flew off strongly, giving a softish, disyllabic call like a muffled Fieldfare.

Plate 140. Dusky Thrush, Pitcox, Lothian 21 October 2022. The bird in-the-hand after ringing, showing its distinguishing features. © *Liz Fraser*

After giving the bird, wherever it was, time to settle down, we went looking for it to see if it would be a viable twitch for other birders, but with no luck. For a number of reasons, not least that it was now getting late in the day and that it was on a busy working farm, it was reluctantly decided not to put word out at the time. The local recorder was, however, contacted and the sighting put on BirdGuides as being at an "undisclosed site in Lothian" to alert local birders to the fact that it had turned up in their area. Following discussion with the landowner, a safe and unobtrusive plan for viewing was drawn up and the news would be released if the bird reappeared. Sadly, it was not seen the next morning, nor was there any sign over the following few days despite many hours of searching.

Breeding in the far north-eastern Siberian taiga and wintering in south-east Asia, Dusky Thrush is one of the rarest of the Asian/Eurasian thrushes to be recorded in Britain, with just 16 records. The first of these was shot at Gunthorpe, Nottinghamshire on 13 October 1905.

The Pitcox Dusky Thrush is likely to have arrived on the coat-tails of the many Redwings that were coming in from the continent that day (there were quite a few going over the farm in the morning, with a few settling briefly in the hedgerows to feed on Hawthorn berries). Presumably it had been displaced from its south-eastern migration route by some high-pressure system and then joined up with these and other thrushes, continuing with them on their westward journey. Other British records of the species have also coincided with big arrivals of wintering thrushes. On this particular October day, tens of thousands of Redwings were recorded coming in off the North Sea at spots along the east coast, while many others were moving cross-country, including 122,000 in a few hours over one site in Lancashire.

Despite its impressive rarity credentials, the Dusky Thrush is not the regionally rarest species to have occurred at Pitcox. During a warm, southerly airflow in May 2006, I found Scotland's first Iberian Chiffchaff here (see *Birding Scotland* 9: 53–57). With all respect to the fair-weather *Phylloscopus*, however, the thrush is the most exciting bird we've seen here, with its very classy looks and an air of eastern mystery and adventure (well, I thought so).

Whatever, it seems beyond miraculous that a Dusky Thrush should have travelled so far and then dropped into a little mist net parked in some scruffy bushes at the side of a big field a couple of hundred metres from my house.

Acknowledgements

I thank Liz Fraser for helping to record the Dusky Thrush, and Stella Findlay for permission to ring at Pitcox. Rare thrush records were sourced from the invaluable www.birdguides.com/species-guide. The great Redwing arrival was described in its review of the week's birding highlights at: https://www.birdguides.com/articles/review-of-the-week/review-of-the-week-17-23-october-2022

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This record is subject to acceptance by British Birds Rarities Committee (BBRC).

Status of Dusky Thrush in Scotland

The species is particularly rare in Scotland, with just four previous records, all in Shetland: Fair Isle on 18–21 October 1961 (trapped on 19th), Whalsay on 24 September 1968 and 5 December 2018, and Firth, Mainland 6–13 November 1975. The Fair Isle bird was the first and, until the Pitcox individual, the only one to have been ringed in Britain. Only the southern Blue Rock Thrush (which is, strictly, not a thrush, but a thrush-like chat) has been seen fewer times than Dusky, with two records. The closely related Rock Thrush has been recorded seven times.

Those classic far eastern thrush species that are much sought-after during autumn migration or hoped for to brighten up birding on a winter's day, have been seen with perhaps surprising frequency, relatively speaking, in Scotland, with Siberian on ten, Eye-browed on 16, and White's on 61, up until 2021. The majority of these records are from the Northern Isles, notably Shetland. A few weeks later, we enjoyed seeing the Black-throated Thrush in Haddington, the second for Lothian and the 46th for Scotland (see pages 186–189). So, by any reckoning, Dusky remains one of the most uncommon of the family here in Scotland and very much a quality rarity.

Plate 141. Stejneger's Stonechat, Crail, 23 October 2022. The richly coloured fringes to the upperpart feathers could at times produce a stark contrast to the pale peachy buff underparts, clearly defined almost white throat, and rich peachy coloured rump (the latter appearing to show narrow dark streaks to some of the upper-tail coverts). © *Dennis Morrison*
Plate 142. Stejneger's Stonechat, Crail, 23 October 2022. The pale peachy buff underparts with contrasting and clearly defined almost white throat are very obvious in this image. The pale supercilium was generally poorly defined, though appeared most noticeable when the bird was viewed head-on. The bird spent the majority of its time feeding very low down, and was much less obtrusive than tends to be the case with European Stonechat. © *Sandy Morrison*

Stejneger's Stonechat, Crail, Fife 22 October 2022 – first for Fife and mainland Scotland

J. WILSON

The weather that you hope for as a birder on the east coast of Scotland in autumn appeared on 20 October 2022, with strong south easterlies originating from an area of high pressure that stretched from central Europe east into Russia. Even better, there was a band of rain moving in from the west to potentially ground any birds being pushed across the North Sea by the prevailing winds.

Despite the birding conditions being really rather grim due to heavy rain and strong winds, on the afternoon of the 20th I managed to find a Red-breasted Flycatcher feeding happily in a sheltered corner of the Patch at Fife Ness, with newly arrived Yellow-browed Warbler, Black Redstart, Common Redpoll and a smattering of commoner migrants making for a rewarding few hours.

I was out early on the morning of the 21st to make the most of the much improved, calmer and sunnier conditions, and it became clear that a few other local Fife birders had a similar idea. My find highlight of the day was a Barred Warbler at Lower Kilminning, whilst tracking down a 'chacking' Ring Ouzel, but the top bird was undoubtedly the Red-flanked Bluetail found at Upper Kilminning by Brian Allan (I was about 50 m away at the time, checking some cover and thinking that it looked great for a Bluetail!).

I decided that on the 22nd I'd bird away from the more popular spots like Fife Ness and Kilminning as I felt that they were getting well covered, and there might be birds to find elsewhere. The morning was very misty and the visibility very poor, so my plan was to bird

some of the more open areas just to the north-east of Crail until the mist burned off (it never did). The decision paid off when at 08:50 hrs I flushed a Richard's Pipit from a stubble field right by the footpath (it promptly disappeared into the mist, never to be seen again).

At 10:50 hrs that morning I was walking the track that runs along the security fence on the western edge of the northern part of the long abandoned Crail airfield. This is an area of derelict World War II buildings that has reasonable patches of tall weedy vegetation intersecting the buildings and areas of tarmac. To me it has always looked great for Black Redstart or a shrike though I have, needless to say, seen neither here.

As I wandered along, I noticed through the mist a strikingly pale passerine perched on the fence line about 40 m ahead of me. On 'binning' it I got a brief glimpse of a chat before it dropped down inside the perimeter fence. The bird didn't look right for Whinchat, despite its strikingly pale colouration, as the face pattern appeared rather subdued. I quickly moved a few metres towards where the bird had disappeared and relocated it perched low down on the top of a dead thistle head, but again only got a brief view before the bird moved on and was lost from view. It was clearly a Stonechat but looked decidedly 'eastern' due to its very pale underparts, strikingly paler throat, indistinct pale supercilium, and what looked like a peach coloured rump. It was at that point that it occurred to me that I really should have paid more attention to the recent online discussions relating to Siberian versus Stejneger's Stonechat identification.

I was very aware that with such fleeting glimpses and the misty conditions there was a chance that the bird might disappear before I got any decent views, or that some key features may not be visible with just binoculars. The bird reappeared briefly again so I maxed the zoom on my 'point and shoot' bridge camera and rattled off some photographs, at which point I lost the bird again as it flew out of sight behind a mound of earth.

A quick glance at a couple of photos confirmed that the features I'd seen in the field were indeed present, though the rump looked surprisingly richly coloured, and the mantle appeared darker than I was expecting. However, the low light levels and mist meant that the quality of the images was pretty poor, potentially exacerbated by a bit of camera shake.

I took a back of camera shot of one of the images and WhatsApp'ed it to my brother Kester Wilson, asking for his thoughts. He immediately phoned back with the opinion that it looked really good for Stejneger's Stonechat. I was somewhat relieved to get confirmation

Plate 143 a & b. Stejneger's Stonechat, Crail, 25 October 2022. In lower light conditions the upperparts could appear remarkably dark, but the richly coloured peachy orange rump was always apparent even if the apparent dark streaks down the centres of the upper-tail coverts were not, even when the bird was observed at close range. © *John Anderson*

that I was not having a 'moment', but also a bit nervous that the quality of my image and that the poor light/visibility might have exaggerated some of the bird's features. I put out the news of Siberian Stonechat (I must admit to being so out of the loop that 'Eastern Stonechat' is not a term that I have ever used) alongside the back of camera image onto the Fife WhatsApp Group and onto Twitter. Within ten minutes of finding the bird I had put the news out, and the first observers arrived very shortly afterwards.

The bird proved surprisingly elusive for the remainder of that day and was only seen on a handful of occasions. The light conditions when it did show remained poor due to mist, then rain, and then fading light. However, these sightings seemed to confirm that the bird was exhibiting the features that one would expect of Stejneger's Stonechat. I just hoped that the bird remained until the next day as the forecast was for much improved weather and light conditions.

The early morning of the 23rd was actually gloomy with frequent showers, and there was no sign of the bird until 10:00 hrs when the rain ceased, the cloud cleared and the sun came out. At this point the stonechat reappeared in the same area as when first found, and for the remainder of the day, and indeed its stay, it showed extremely well as it fed just the other side of the perimeter fence, frequently coming within 5–10 m. The better light and more prolonged views ('scoped at under 10 m) confirmed that all of the features shown by the bird were consistent with what one would expect of a Stejneger's Stonechat. Several photographers were also able to get some excellent photographs, in a range of light conditions.

Aware that the identification criteria for these two 'Eastern' Stonechat species were still being resolved, it seemed likely that identification of the Crail stonechat to species level would require the collection of a dropping or feather left by the bird, and the use of genetic analysis. Two dropping samples were collected on 23 and 25 October and sent off to Professor Martin Collinson and his laboratory at the University of Aberdeen. It initially proved not possible to extract DNA from the samples, and I resigned myself to it having to go down as 'Eastern' Stonechat species, at least until the field identification criteria are (hopefully) confirmed. However, on Christmas Eve 2022 I received an email from Martin. A last ditch attempt, involving rinsing down all of the vegetation and the inside of the sample bags, had yielded 224 base pair fragments of DNA and the suspected field identification had been confirmed. The results from the genetic analysis indicated a 100% match to Stejneger's Stonechat from Sakhalin and Vietnam, but showed 8% divergence from Siberian Stonechat. Many

Plate144. Stejneger's Stonechat, Crail, 23 October 2022. In flight the rich peach coloured rump contrasted with the relatively dark upperparts, and dark tail. © *John Anderson* **Plate 145.** Stejneger's Stonechat, Crail, 25 October 2022. The bird was assumed to be a 1cy female based on plumage characteristics. The underwing coverts were rather pale grey. © *Lorraine McCormack*

thanks indeed to Martin and his laboratory for their efforts. My take home message is definitely that if relying on droppings for genetic work, get as many samples as possible!

The field identification features for Siberian and Stejneger's Stonechat are not yet fully established, but a recent paper in *British Birds* (Volume 116, Issue 1, pages 41–53) sets out criteria by which some individuals of 'Eastern Stonechat' might be assigned to species. These criteria largely follow those discussed previously online, with a note of warning that many intermediate birds cannot at present be safely assigned to species.

The fringes to the mantle and other upperpart feathers of the Crail bird were richly coloured with rather warm tones, rather than the cold pale tones one would expect on typical Siberian Stonechats. This gave a relatively dark overall appearance to the upperparts, which contrasted with the pale but warm peach coloured underparts. In low light conditions, the contrast between pale underparts and darker upperparts could appear very striking. The even paler near-white throat contrasted very noticeably with the more warmly coloured underparts.

The rump of the Crail bird was a rich and warm rusty orange colour, rather than the colder and paler tones that one would expect in Siberian Stonechat. The bird appeared to have narrow black streaks in the centres to some of the upper-tail covert feathers, though their presence was not easy to confirm even in photographs, as it was difficult to be certain that they weren't simply shadowing cast by slightly out of place feathers. This suggests that unless the upper tail covert dark centres are substantially broader than in the Crail individual (which showed in good light conditions and down to less than 10 metres at times) they may be difficult to confirm in the field.

The most notable feature of the bird's head pattern was the rather poorly defined pale supercilium, strongest in front of the eye where it extended to around the base of the bill, and weakest behind the eye. At some perspectives, particularly when viewed from an oblique angle, the supercilium became very indistinct.

Unlike European Stonechat, this bird spent the vast majority of its time perched low down in the weedy vegetation, was easily lost from sight, and could be surprisingly unobtrusive. It rarely used taller perches, though on two occasions was seen to perch at the top of a 6 m bush and one of the derelict single story buildings.

The bird seemingly departed overnight of 25 October and there were no reports after this date.

Jared Wilson, East Neuk, Fife.

This record is subject to acceptance by the British Birds Rarities Committee (BBRC).

Status of Stejneger's & 'Eastern' Stonechats in Scotland

There are two previous records of Stejneger's Stonechat for Scotland, both occurring on Shetland as recently as 2019: a 1cy male at Westing, Unst, from 8–14 October, trapped, photo, DNA analysis, and another 1cy at Leebitton, Sandwick, Mainland, from 17–28 October 2019, photo, DNA analysis.

There are also ten confirmed Siberian Stonechats Saxicola maurus *for Scotland, split between Shetland (6), Fair Isle (3) and the Isle of May (1), of which three could be identified as the distinctive subspecies 'Caspian Stonechat'* Saxicola maurus hemprichii.

However, due to the identification difficulties of separating these two cryptic species in the field, the vast majority (168) of 'Eastern Stonechats' in Scotland are recorded as either Siberian or Stejneger's Stonechats Saxicola maurus/stejnegeri *(74 Shetland, 46 Fair Isle, 24 Orkney, 10 North-East Scotland, 3 Fife, 3 Isle of May, 2 Lothian, 2 Borders, 1 Angus & Dundee, 1 Ayrshire, 1 Caithness and 1 Outer Hebrides). The three previous either/or records for Fife are as follows: first-winter or female, Fife Ness, 29 September to 1 October 1983, first-winter or female, Balcomie, 3 October 1987 and first-winter or female, Fife Ness, 28–30 October 1989.*

The record considered here therefore becomes the first 'Eastern Stonechat' to be identified to species level for mainland Scotland, and was deservedly popular with Scottish birders.

Black-throated Thrush, Haddington, 9–15 December 2022 – second record for Lothian

I.J. ANDREWS & N. MACIVER

Plate 146. Black-throated Thrush, Haddington, Lothian, 9 December 2022. © *Neil MacIver*

On 9 December 2022, Neil MacIver got something of a surprise when he arrived home from work at about 14:30 hrs. There was a Black-throated Thrush feeding with the Blackbirds on the apples in his garden (Plate 146). He took a few photos through the window, but soon after, everything was flushed by a Sparrowhawk, and it didn't return.

Visits to Neil's house/garden were not a feasible option, but he put the news out, posted his photos on Twitter and hoped it would be picked up nearby on the following day.

David Kelly was first to relocate the bird the next morning (at 09:20 hrs) in nearby Dunbar Road, at the east end of Haddington. It was in an area with several mature Yew trees viewable from the road, and although the thrush would fly elsewhere, this garden proved increasingly to be its favourite haunt over its seven-day stay. Surprisingly, it never knowingly returned to Neil's garden, despite the abundance of apples there.

The original photos, taken in dull light, showed nothing to suggest it was anything but a first-winter male Black-throated Thrush. However, as the bird became more approachable and was well photographed in low winter sunshine, a few apparent anomalies were flagged up, especially on the undertail coverts and flanks. The significance of these anomalies is not fully understood - are they signs of hybridisation, or do they simply represent variation within the species (see below)?

Description

The throat and chest were essentially black with varying amounts of white mottling. There were fine black-and-white streaks on the throat becoming blotchier on the upper breast where they graded into large black markings on white feathers. Lower down, the overall effect was more solid black. There, the feathers were basically black with narrow white fringes. The lower edge of the black breast was sharply demarcated. No red or brown feathers were visible. The throat and chest were darker than in some published photos of first-winter males, and at a distance looked uniformly dark. **Head:** grey (browner in low sunshine) with darker grey lores and ear coverts, and a hint of a paler crown and nape. **Bill:** dark upper mandible. Lower mandible largely golden yellow but with a dark tip. The centre of the belly was off-white with diffuse grey flecks but there were larger blotches along the sides of the lower breast and flanks. When the wings were raised, a more extensive, more solid area of grey was visible. In low sunshine, several small, restricted areas of brown or even russet were visible. These were on the side of the upper chest, along the flanks and closer to the undertail. The appearance of the long undertail covert feathers depended on the angle and lighting. In dull light, they appeared either grey (Plate 146) or, at most, brownish (Plate 148). However, in low sunshine, they looked extensively russet brown with some pale

streaking (Plate 149a). The underwings were striking (Plate 149b). The undersides of the flight feathers were dark with large orange 'fingers' at their bases and there were extensive white areas on the tips of the secondaries. Most striking were the bright, unmarked, orange-russet greater underwing coverts. Thrushes can be aged at this time of the year by the presence or absence of a 'moult limit' within the greater wing coverts. In a first-year bird, this marks the contrast between the older juvenile feathers and the newly replaced adult-type feathers. However, this can be difficult to see, especially in the field. In the case of the Haddington bird, it is visible in at least a couple of photos, making this a first-winter bird (Plate 147). The primary coverts can also be used to age such a bird. Stephen Menzie kindly provided some information that supported the idea that the Haddington bird was a first-winter. In adults, the patterning on the primary coverts creates a dark terminal 'bar' on the closed wing. On juveniles, because it's just the fringes of the primary coverts that are grey or brown, the closed primary coverts are more uniform (see Plate 148). **Tail:** dark grey with no sign of red or brown. **Legs:** pinkish. **Call:** a distinctive call was heard a couple of times as the bird flew purposefully from its preferred Yew trees on 10 December. It was not a thrush-like "chuck" or chatter, but rather a three-syllable "koo–koo–koo", similar in pitch but slower than the call of Green Woodpecker. xeno-canto.org/666431 is the most similar. It should be stressed that the orange-streaked undertail coverts and scattered brownish patches on the flanks were particularly discernible, and at times only discernible, in photographs of the bird in sunshine. It is worth noting that there was no sign of any russet in the tail itself.

Discussion

The thrushes that make up the Black-throated–Red-throated–Dusky–Naumann's Thrush complex breed across Siberia and China and winter mainly in India and SE Asia. Their systematics have evolved over the decades and what are now recognised as four species, were

Plate 147 (top). Black-throated Thrush, Haddington, Lothian, 14 December 2022. © *Dennis Morrison*
Plate 148 (bottom). Black-throated Thrush, Haddington, Lothian, 15 December 2022. © *Pete Duncan*

only two (Dark-throated and Dusky) until 2008 (Knox *et al.* 2008). More recently, and not accepted by IOC at the time of writing, An *et al.* (2021) proposes that these two thrush complexes are best divided into two separate species (*T. naumanni* and *T. ruficollis*) with two subspecies per species - as they were pre-2008. However, the situation is complex, and studies are ongoing.

Apparent hybrids or intergrades between the four forms are often discussed, but often with the caveat that it has not been shown that these are *true* hybrids (our italics) (e.g. Knox *et al.* 2008, Parkin & Knox 2010). For example, Lars Svensson (in du Ruwe & Faveyts 2011) says 'about 50–75% of adult Black-throated Thrushes show dark reddish-brown feather centres on the rear flanks and on the longest undertail-coverts' and Shirihai & Svensson (2018) are of the view that 'a large proportion (perhaps up to 25% of adults, slightly less in immatures) of seemingly pure Black-throateds have partially dark rufous-tinged or rufous-streaked undertail-coverts, especially the longest ones, and this is apparently not a sign of hybridisation, or at least not recent interbreeding.' This view has filtered down to the *Collins Bird Guide* which says 'undertail-coverts mainly whitish but can have rufous element.' Similarly, Arend Wassink (in Addlesee 2013) indicated that he 'regularly comes across birds [in Kazakhstan] with red in the base of the tail, but is unsure whether this is normal and within the range of Black-throated Thrush or whether it points to a hybrid origin.'

In Britain, a number of apparent intergrades presumably with Red-throated Thrush have been described and photographed. Of these, one at Banchory (North-East Scotland) in 2013 (Addlesee 2013) and another in Lincolnshire in 2020 (Mason 2020) are noteworthy. In high-quality photographs, both can be seen to have a small amount of russet in the outer tail maybe indicating a link with Red-throated Thrushes. Both are accepted by BBRC but with the Banchory bird 'showing some characters of Red-throated Thrush' (*British Birds* 107: 631, 114: 611). More recently, photographs of a bird in North Yorkshire on 19–20 February 2023 (Race 2023) also show a very similar undertail colouration to the Haddington bird. Other suspected hybrids have also been reported in The Netherlands and Finland. Indeed, a search for Black-throated Thrushes in Finland on *tarsiger.com* shows that of the 83 records retrieved, 57 are labelled as Black-throated Thrush, 21 as Black-throated or hybrid and five as hybrids.

Plate 149 a & b. Black-throated Thrush, Haddington, Lothian, 15 December 2022. © *Len Hunter*

A bird that frequented a garden in Belgium in 2010/11, that was also trapped, is of particular interest (De Ruwe & Faveyts 2012). It shows some similarities to the Haddington bird, but they are not identical. The Belgian bird had extensive russet streaks on the otherwise white undertail coverts, and these streaks extended onto the flanks. In this case, a dropped feather analysed for DNA apparently showed the bird to be a hybrid Naumann's Thrush × Black-throated Thrush (Vanhove & Raty 2015, Vanhove *et al.* 2020), and according to one social media post, it was '33% Black-throated Thrush and 66% Naumann's Thrush' and 'an adult female' (De Ruwe 2021). This bird remains accepted nationally as a 'Black-throated/Red-throated/Dusky/Naumann's Thrush' (Vanhove *et al.* 2020). Interestingly, the same bird is included in Shirihai & Svensson (2018) as a 'presumed adult female' Black-throated Thrush with the addition of 'note hint of rufous-tinged vent and undertail-coverts, which is quite frequent and not an indication of hybridisation with Red-throated Thrush'. Also, photographs taken of the bird underlit by snow (e.g. Vanhove & Raty 2015) are very different from those taken in uniform dull conditions (e.g. Shirihai & Svensson 2018).

So where does this leave the Haddington bird? As pointed out by Stoddart (2017) some records of presumed hybrids (of any species) have until now been accepted by BBRC with no more than a caveat whereas others have not been published in the BBRC reports at all. 'It is therefore proposed that all accepted records of hybrids and intergrades (either with another rarity or not) will be published in the main body of the annual report but under a separate header.' A decision on the Haddington bird is awaited...

Lothian's first Black-throated Thrush was at Prestongrange on 25 December 1989.

Acknowledgements

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This record is subject to acceptance by British Birds Rarities Committee (BBRC).

Plate 150. Stejneger's Scoter (left) with Velvet Scoters, Gullane Point, Lothian, 10 December 2022. © *Keith Gillon*

Stejneger's Scoter, Gullane Point, Lothian 10 December 2022 – first for Lothian and Britain

K. GILLON

It was early afternoon on 10 December 2022 when Calum Scott and I finally arrived at Gullane Point, Aberlady, our intended morning visit having been cut short when we received news of a Black-throated Thrush at nearby Haddington. With the sea to the east of the headland largely quiet, we moved to check the area to the west where I knew the majority of scoter and eider had been in recent weeks. Initially the light conditions weren't in our favour and everything was largely silhouetted. However, after 15 minutes or so, the overhead conditions changed and the light improved significantly. I was scanning through the mixed flocks of Eider and scoter when I suddenly picked up a distant drake scoter with a striking head and bill structure, amongst a small group of Velvets, the likes of which I'd never seen before.

The 'forehead slope' was remarkably straight and there was a prominent protuberance, or horn, at the bill base. This definitely warranted closer scrutiny. Unfortunately, CS had chosen this point to head off to investigate a rock-type pipit that had flown past and a frustrating few minutes followed while I waited for him to return before trying to get him onto the bird. Once he was, I was able to switch over to my zoom lens without fear of losing the bird and Calum was the able to direct me as I tried to take some record shots. For the next 30 minutes or so we discussed the visible features while I tried to take as many pics as I could. It was clearly no Velvet Scoter and I was able to dismiss the possibility of it being the regular White-winged Scoter that has frequented the Forth in the last few winters, chiefly off Musselburgh (a bird I have seen on numerous occasions) as the head and bill structure was really very different. There really could only be one conclusion, it surely had to be a drake Stejneger's Scoter.

Throughout our observation, the group of Velvets that the bird was among were drifting slowly eastwards, though remaining approximately 400 m offshore. As they drew level with the Point they began actively diving before suddenly taking off, heading a long way west and eventually landing very distantly off Aberlady beach. With the light failing it was evident that we weren't going to achieve anything further by pursuing it. We

had a quick look at images online to make sure we weren't making some fundamental error before we headed back to the car in a state of slight disbelief. Once home I downloaded my pictures and was relieved that the images, though small and poor, did convey the structure of the bird pretty well. While we were entirely confident of the identification, I was aware of the significance of the record, so I erred on the side of caution and tweeted out a message that an 'apparent' drake Stejneger's Scoter had been off Gullane Point and included a selection of my images. Reassuringly, all the feedback received was positive.

Fortunately the bird was still present the following morning and although never especially close did provide the gathered crowd with reasonable views at times before it once again flew off west just prior to mid-day.

In profile it was strikingly different to the accompanying Velvets so much so that even at long range, when there was no chance of seeing the protuberance or detecting any bill colour, it could be easily picked out. From the peak of the crown to the bill tip, formed one straight line (broken only by a 'basal' knob/protuberance). At the time I was reminded of my old, plastic, school set square with the line from crown to bill tip equivalent to the hypotenuse of the set square - it appeared that straight, and therefore clearly different to the concave forehead of a Velvet, or the two-stepped profile of a White-winged. To my eye it gave the head a triangular look and made it look much longer-headed and more 'snouty' than the accompanying Velvets.

Given the range it was viewed at, the knob/protuberance was only visible when the bird was in profile. At other times it was presumably 'lost 'against the black of the head behind, however, when visible it was extremely obvious. On the day of discovery, I kept referring to it to Calum as the 'rhino horn', not that that described its shape at all, just how obvious it was, and its similarity in position to the 'horn' on a Rhinoceros Auklet (which is the only bird I've seen with anything similar). It was all black but the exact structure was hard to establish. In the field, as well as being prominent vertically, it also appeared forward pointing, though some flight shots show a squarer effect. What was unequivocal was that it was more than just a swollen base, being more akin to a 'horn' hence my reference to a 'rhino horn'.

The bill sides were clearly yellow and similar in tone to Velvets alongside. The bill centre colour was harder to establish, though it was clearly different to the wholly yellow bill of the accompanying drake Velvets. At range the central bill area just appeared dark, in contrast to the yellow bill sides, but when seen at its closest, it could be seen to be a reddish colour. The amount of 'bare coloured bill' was also different to the Velvets, there being far more of an acute angle between the 'gape' and the top of the bill than on Velvet which was far closer to 90°. Whether that was due to increased black feathering at the gape, or the actual bill nearest the gape being black was impossible to say given the range, but, combined with the structure, and the protuberance, gave a very different feel. The white eye 'tick' was more extensive and obvious than on the accompanying Velvets, extending further

Plate 151a & b. Stejneger's Scoter, Gullane Point, Lothian, 10 December 2022. © *Keith Gillon*

behind the eye, but to my mind it was not as prominent as on the Musselburgh White-winged, which could be often picked up on that feature alone. At no point when re-locating it after the flock dived was my initial 'pick-up' feature on this bird the 'eye-tick', it was always the head shape/structure.

The plumage was wholly black, including the underparts, with contrasting white secondaries. There was no evidence of any browner feathering on flanks.

There were a number of reports of the bird over the following days from Gullane Point but also from the adjacent Gosford Bay, with the last claim, off Aberlady, on 20th. To confuse matters slightly, what was unequivocally the White-winged Scoter was relocated in Gosford Bay on 2 January 2023. Having never been reported from this far east before, it will have thrown a spanner in the works for any observers who only saw what they presumed to be the Stejneger's at extreme distance. Fortunately, when seen at reasonable range there was no such confusion. All the observers on 11 December who had experience of White-winged Scoter, were impressed by just how different this bird was. As well as the obvious structural differences, Ian Andrews, who has seen the Lothian White-winged Scoter on more occasions than anyone else, also noted some differences in behaviour, in that the Stejneger's didn't sit as low in the water as the Musselburgh White-winged Scoter, nor did it hold its wings as low as the Musselburgh bird habitually does (when it reveals a prominent white line from the exposed secondaries).

For the majority of the 2022/23 winter the scoter and Eider flocks off the Lothian coast have remained frustratingly distant (as exemplified by the White-winged Scoter being extremely sporadic in its appearances this winter, while an immature drake King Eider present off the Lothian coast since October 2021 went wholly unseen from October 2022 until February 2023,when it reappeared for two days only) so there is every likelihood that the bird is still present. With any luck, it will follow a similar pattern to the White-winged Scoter and return for a number of years.

This record is subject to acceptance by British Birds Rarities Committee (BBRC) and, as potentially the first for Britain, also by the British Ornithologists' Union Records Committee (BOURC).

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Status of Stejneger's & White-winged Scoter

The taxonomy of the 'white-winged' Scoters has changed considerably since the turn of the century. Until 2005 all 'white-winged' Scoters were considered to be one species, then, our familiar Velvet Scoter Melanitta fusca *was split as a separate species from White-winged Scoter* M. deglandi *(comprising the two subspecies American* M. deglandi deglandi *and the Asian* M. deglandi stejnegeri*) before 2019 saw the further split of White-winged Scoter* M. deglandi *from Stejneger's Scoter* M. stejnegeri.

To date Scotland holds a monopoly on the British records of non-Velvet 'white-winged' Scoters. There have been two accepted records of White-winged Scoter: a 2cy male at Murcar, Aberdeenshire from 11 to 23 June 2011, and an adult drake there between 25 June and 29 August 2016 and from 2 July and 19 August 2017, with what is presumed to be the same individual wintering in the Firth of Forth, predominantly off Musselburgh, from 2018 to the present.

In addition, there are two records of birds currently accepted as either White-winged or Stejneger's Scoter: an adult drake at Musselburgh on 26 December 2013, and a 1cy male on Unst and Yell,Shetland between 16 and 22 October 2017. However, these records have not yet been reviewed by BBRC since the species split in 2019.

There is also one record of a Stejneger's Scoter from Ireland: a drake in Co Kerry in March 2011, plus a presumed 1cy female American White-winged Scoter at Tonatanvally, Achill Island to 6 January 2023.

Further field there have been a number of records of Stejneger's Scoters from the countries bordering the Baltic and Barents Sea (Finland, Norway, Sweden, Denmark, Poland, Latvia and Estonia), and vagrants have even reached France, Spain and Iceland.

Advice to contributors

There is a basic division in *Scottish Birds* between papers and short notes that are peer-reviewed followed by the Club and Birding sections which are not. These splits in content are highlighted by fonts used and paper colour.

The first part accepts manuscripts on the status, distribution and populations of birds in Scotland and, particularly, changes in these over time. Write-ups of census work find a natural home in this section, as do the culmination of research topics and updates to information in *The Birds of Scotland* (Forrester *et al.* 2007). Original work and observations are encouraged, but summary papers will be considered and key-note papers of a more general nature may occasionally be commissioned. Papers should be fully referenced as in any scientific work. House style should be followed and guidance is available on the SOC website. Articles of less than 700 words are generally considered as short notes, but are otherwise in a similar format.

Authors should bear in mind that only a small proportion of the *Scottish Birds* readership are scientists and should aim to present their material concisely, interestingly and clearly. Unfamiliar technical terms and symbols should be avoided wherever possible and, if deemed essential, should be explained. Supporting statistics should be kept to a minimum. All papers and short notes are accepted on the understanding that they have not been offered for publication elsewhere and that they will be subject to editing. Papers will be acknowledged on receipt and are normally reviewed by at least two members of the editorial panel and, in most cases, also by an independent referee. They will normally be published in order of acceptance of fully revised manuscripts.

The latter two sections of *Scottish Birds* welcome informal as well as more serious contributions about any aspect of birds and their habitats in Scotland. It is not peer-reviewed, has minimal editing, and contributions can be descriptive, anecdotal, controversial, humorous or quirky. They can report on surveys, express opinions, describe birds and places, look back into history, speculate as to the future and can represent organisations or be the work of private individuals. The documentation of rare and scarce birds in Scotland, plus a wide range of identification, site and species related information is lavishly illustrated by high quality colour photographs. We welcome photographs, maps, cartoons, and will accept basic graphs and tables when relevant. Meeting reports or field trip accounts are all welcome, but our main aim is to focus on Scottish birds in Scotland or abroad. We will occasionally include articles from other parts of the world and sometimes about other wildlife.

In terms of length, we accept anything from short notes up to articles of *c.* 2,000 words. There are no strict guidelines as to format, but we would encourage contributors to follow the house style (see SOC website for guidance, as detailed above). Within this section, we also publish obituaries of Club members and others who have contributed to Scottish ornithology. These are organised through Waterston House, where the Club Administrator will liaise with contributors. Book reviews are organised through the Club Librarian.

Please submit articles! We very much wish to encourage unsolicited contributions to this part of *Scottish Birds*. The editors spend much time requesting articles - a task that would be far less onerous if they are submitted freely from members and other readers. We wish to make it as easy as possible for contributors to send us material that reflects the enormous range of news, work and opinion relevant to Scotland's birds.

Text, image and graphics formats

Contributions should preferably be submitted in electronic format via email. Only short articles and letters can be accepted in printed or hand written form. No fees are paid. Tables, maps and diagrams should be designed to fit either a single column or the full page width. Table and photograph captions should be self-explanatory and should be able to stand alone from the text. Please include all captions after the text. For photographs please supply the locality and month/year taken (if known), together with the name of the photographer.

Maps should preferably be provided in pdf format, or as a high-resolution jpg/tiff file. Maps may be redrawn to maintain house style, in which case the data used in their compilation may be requested. Charts should be provided with their accompanying data within a stand-alone spreadsheet so that house style can be applied. Photographs should be supplied as direct copies of the original (un-altered and un-cropped) camera files.

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Please send all correspondence to: SOC Club Administrator at Waterston House, Aberlady EH32 0PY or to mail@the-soc.org.uk Telephone: 01875 871330 or email for further advice and assistance.

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Plate 152. I was sitting in Holyrood park, enjoying the last of the day's winter sun, watching people feed the swans and ducks while the mixed flock of gulls very noisily quarrelled for scraps. Screaming and chasing after the smallest bit of bread crust, I felt bad for the ducks who were just not quite quick enough.

It wasn't until I looked closer that I noticed this brave young Black-headed Gull very confidently running the gauntlet - jumping across the backs of this writhing mass of Mute Swans, deftly dodging the far-reaching snaps from the would-be pond dragons, and returning their threatening hisses with its own harsh little defiant yell.

I was surprised to see that not only was it quite comfortable dodging and weaving, but leaping forward to snap food out of the air right in front of the bigger birds.

I spent about 20 minutes photographing this gutsy little bird, trying to get the perfect shot that captured its fearless attitude and bold personality - I think this one sums it up perfectly, what a power stance!

I was lucky to have great light this evening, so I could use a high shutter speed and a low depth of field to both bring the gull into focus, while turning the milling group of swans in the background into something more abstract.

Ewan Meldrum, Edinburgh, Lothian.
Email: ewan.m@tuta.io

Equipment used: Canon R5 camera, Canon 100–400mm mk2 lens, Manual, 1/1,000 second, ISO 160, f5.6.

Featuring the best images posted on the SOC website each quarter, PhotoSpot will present stunning portraits as well as record shots of something interesting, accompanied by the story behind the photograph and the equipment used. Upload your photos now - it's open to all.